

RUTH MISENER

r.misener@imperial.ac.uk

Professor in Computational Optimisation
Department of Computing

Imperial College London
wp.doc.ic.ac.uk/rmisener/

RESEARCH DOMAIN: COMPUTATIONAL OPTIMISATION

FOUNDATIONS

Mixed-integer nonlinear optimisation (MINLP), Computational & numerical optimisation, Software implementations for global optimisation, Process systems engineering, Bayesian optimisation

APPLICATIONS

Decision-making under uncertainty, Process design & operations, Scheduling, Experimental design

REPRODUCIBILITY & ACCESSIBILITY

My research team develops and maintains open-source code on [GitHub](#), releases video presentations on [YouTube](#), and announces new research on LinkedIn ([link](#))

PROFESSIONAL APPOINTMENTS

Amazon <i>Amazon Scholar</i>		London, UK 2025-
Imperial College <i>Professor</i>	Department of Computing	London, UK 2020-
<i>Senior Lecturer</i>	Department of Computing	2017-20
<i>Lecturer</i>	Department of Computing	2014-17
<i>Royal Academy of Eng. Research Fellow</i>	Centre for Process Systems Engineering	2012-14

EDUCATION

Princeton University <i>PhD</i> in Chemical Engineering. Advised by Professor C. A. Floudas. <i>Thesis Title:</i> Novel Global Optimization Methods: Theoretical & Computational Studies on Pooling Problems with Environmental Constraints		Princeton, NJ 2012
Massachusetts Institute of Technology <i>Bachelor of Science</i> in Chemical Engineering		Cambridge, MA 2007

AWARDS

FELLOWSHIPS / SCHOLARSHIPS

BASF / Royal Academy of Engineering Research Chair in Data-Driven Optimisation	2022-27
Engineering & Physical Sciences Research Council Early Career Fellowship	2017-22
Royal Academy of Engineering Research Fellowship	2012-17
Imperial College Junior Research Fellowship (<i>declined in favour of the RAEng Fellowship</i>)	2012-15
USA National Science Foundation Graduate Research Fellowship	2007-12
Princeton University Gordon Y. S. Wu Fellowship	2007-12
Robert C. Byrd Honors Scholarship	2003-07

AWARDS

Mellichamp Lectureship, Purdue University	2024
Roger Needham Award, for <i>contributions in computer science by a UK-based researcher with up to 10 years post-doc experience</i> , British Computing Society (BCS)	2023

Best Paper, <i>Computers & Chemical Engineering</i> (1 award out of 287 manuscripts, with Folch, Lee, Shafei, Walz, Tsay & van der Wilk)	2023
Saville Lecture, Princeton University	2023
<i>NeurIPS</i> Top Reviewer (among 8% of reviewers with highest quality reviews)	2022, 23
<i>COIN-OR Cup Winner</i> , OMLT judged <i>best contribution to open-source operations research software development</i> (with Cecon, Jalving, Haddad, Thebelt, Tsay & Laird)	2022
<i>Rosenbrock Prize</i> for the best paper in <i>Optimization & Engineering</i> (1 award out of 103 manuscripts, with Kronqvist)	2021
<i>Distinguished Paper Award</i> , Conference on the Integration of Constraint Programming, Artificial Intelligence, & Operations Research (CPAIOR, 1 award out of 30 manuscripts, with Kronqvist & Tsay)	2021
<i>CAST Outstanding Young Researcher Award</i> , American Institute of Chemical Engineers	2020
<i>Best (Innovative) Demo</i> , International Conference on Autonomous Agents & Multi-Agent Systems (AAMAS, with Cyrus, Karamlou, Lee, Letsios & Toni)	2020
<i>Industrial & Engineering Chemistry Research</i> 2019 Class of Influential Researchers	2019
Suzanne C. and Duncan A. Mellichamp Distinguished Lecture, Georgia Tech	2018
Finalist for <i>Best Teaching for Postgraduates</i> , Imperial Student Academic Choice Award	2018
Sir George Macfarlane Medal	2017
RAEng Engineers Trust Young Engineer of the Year	2017
American Institute of Chemical Engineers 35 Under 35, <i>Innovation</i> Category	2017
Finalist for <i>Best Innovation in Teaching</i> , Imperial Student Academic Choice Award	2016
W. David Smith, Jr. Graduate Student Paper Award	2014
Best Paper, <i>Journal of Global Optimization</i> (with Floudas)	2013
Top Reviewer, <i>Computers & Chemical Engineering</i>	2013
Best Poster, 2 nd Belgian Symposium on Tissue Engineering (39 entries)	2013
Excellence in Teaching, Princeton School of Engineering & Applied Sciences	2010
Member, <i>MIT Tau Beta Pi - Engineering Honor Society</i>	2007
The top 20% of MIT Engineering Undergraduates are eligible for TBP	

ADDITIONAL AWARDS TO MY TEAM UNDER MY LEADERSHIP

STEM for Britain, Selected to present research in Parliament	{	<i>Zhang</i>	2025
		<i>Kronqvist</i>	2021
		<i>Mistry</i>	2019
		<i>Olofsson</i>	2019
3 rd Poster Prize BioMedEng22		<i>Sedgwick</i>	2022
EPSRC David Clarke Postdoctoral Research Fellowship		<i>Tsay</i>	2020
Imperial College Research Fellowship		<i>Tsay</i>	2020
NewVoice Media Prize for Computing MEng Thesis		<i>Suraj G</i>	2019
<i>Runner up</i> , May Hicks Award from the Operational Research Society		<i>Page</i>	2019
Newton International Fellowship from the Royal Society		<i>Kronqvist</i>	2019
<i>Poster Prizes</i> in Centre for Process Systems Engineering Annual Industrial Consortium Meeting	{	<i>Thebelt</i>	2019
		<i>Wiebe</i>	2019
		<i>Kouyialis</i>	2017
2 nd <i>Presentation Prize</i> , PSE@ResearchDayUK		<i>Wiebe</i>	2018
1 st <i>Poster Prize</i> , UK/IE Annual Meeting of the Society for Industrial & Applied Mathematics (two-way tie, 34 entries)		<i>Kouyialis</i>	2018
Prizes in Dept. of Computing Google Poster Competition	{	<i>Olofsson</i>	2018
		<i>Baltean-Lugojan</i>	2016
		<i>Kouyialis</i>	2015
Winton Capital Applied Computing MSc Project Prize		<i>Wesselhoeft</i>	2017
1 st <i>Poster Prize</i> PSE@ResearchDayUK (19 entries)		<i>Kouyialis</i>	2017

2 nd Prize Top Presentation at the Dept. of Computing Research Associate Symposium	<i>Letsios</i>	2017
IBM PhD Fellowship	<i>Baltean-Lugojan</i>	2017
FOCAPO/CPC Travel Grant	<i>Kouyialis</i>	2017
Donald Davies Memorial Prize for MEng Thesis	<i>Mistry</i>	2015
2 nd Prize Nobuyuki Idei Young Entrepreneur Award	<i>Fuentes-Garí</i>	2013

PEER-REVIEWED JOURNAL PAPERS ([GOOGLE SCHOLAR](#))

- J65** Zhang S., Feldmann C. W., Sandfort F., Mathea M., Campos J. S., **Misener R.** Limeade: Let integer molecular encoding aid. *Computers & Chemical Engineering*, **199**:109115, 2025.
- J64** Mroz A. M., Basford A. R., Hastedt F., Jayasekera I. S., Mosquera-Lois I., Sedgwick R., Ballester P. J., Bocarsly J. D., del Río Chanona E. A., Evans M. L., Frost J. M., Ganose A. M., Greenaway R. L., Hii K. K., Li Y., **Misener R.**, Walsh A., Zhang D., Jelfs K. E. Cross-disciplinary perspectives on the potential for artificial intelligence across chemistry. *Chemical Society Reviews*, **54**:5433-5469, 2025.
- J63** Sedgwick R., Goertz J. P., Stevens M. M., **Misener R.**, van der Wilk M. Transfer Learning Bayesian Optimization to Design Competitor DNA Molecules for Use in Diagnostic Assays. *Biotechnology & Bioengineering*, **122**:189210, 2025.
- J62** Zhang S., Campos J. S., Feldmann C., Sandfort F., Mathea M., **Misener R.** Augmenting optimization-based molecular design with graph neural networks. *Computers & Chemical Engineering*, **186**:108684, 2024. **Invited for a special issue dedicated to ESCAPE 33**, [GitHub link](#)
- J61** Zhang S., Lee R. M., Shafei B., Walz D., **Misener R.**, Dependence in constrained Bayesian optimization: When do we need it and how does it help?, *Optimization Letters*, **18**:1457-1473, 2024. [GitHub link](#)
- J60** **Misener R.**, Biegler L. Formulating data-driven surrogate models for process optimization. *Computers & Chemical Engineering*, **179**:108411, 2023. **Invited for a special issue associated with FOCAPO/CPC 2023**
- J59** Addis B., Castel C., Macali A., **Misener R.**, Piccialli V., Data augmentation driven by optimization for membrane separation process synthesis, *Computers & Chemical Engineering*, **108**:342, 2023.
- J58** Odgers J., Kappatou C. D., **Misener R.**, García-Muñoz S., Filippi S. Probabilistic predictions for partial least squares using bootstrap. *AIChE Journal*, 2023. [GitHub link](#)
- J57** Kappatou C. D., Odgers J., García-Muñoz S., **Misener R.** An Optimization Approach Coupling Pre-processing with Model Regression for Enhanced Chemometrics. *Industrial & Engineering Chemistry Research*, **62**:6196-6213, 2023. [GitHub link](#)
- J56** Folch J. P., Lee R. M., Shafei B., Walz D., Tsay C., van der Wilk M., **Misener R.** Combining Multi-Fidelity Modelling and Asynchronous Batch Bayesian Optimization. *Computers & Chemical Engineering*, 2023. **Awarded Best Paper (1 out of 287 manuscripts)**, [Video link](#), [GitHub link](#)
- J55** Campos J. S., Parpas P., **Misener R.** Partial Lasserre relaxation for sparse Max-Cut. *Optimization & Engineering*, 2023. [Video link](#), [GitHub link](#)
- J54** Ceccon F.* , Jalving J.* , Haddad J., Thebelt A., Tsay C., Laird C. D.†, **Misener R.**† OMLT: Optimization & Machine Learning Toolkit. *Journal of Machine Learning Research*, **23**:349, 2022. * Authors contributed equally. † Authors contributed equally. [Video link](#), [GitHub link](#)
- J53** Thebelt A., Wiebe J., Kronqvist J., Tsay C., Misener R., Maximizing information from chemical engineering data sets: Applications to machine learning. *Chemical Engineering Science*, **252**:117469, 2022. **Invited for a special issue on Digitalisation**
- J52** Ceccon F., **Misener R.** Solving the pooling problem at scale with extensible solver GALINI. *Computers & Chemical Engineering*, **159**:107660, 2022. [GitHub link](#)

- J51** Wiebe J., Cecílio I., Dunlop J., **Misener R.** A robust approach to warped Gaussian process-constrained optimization. *Mathematical Programming*, 2022. [Video link](#), [GitHub link](#)
- J50** Thebelt A., Tsay C., Lee R. M., Sudermann-Merx N., Walz D., Tranter T., **Misener R.** Multi-objective constrained optimization for energy applications via tree ensembles. *Applied Energy*, **306**: 118061, 2022. **Invited for a special issue on *Artificial Intelligence for Smart Energy Systems in Process Industries***, [Video link](#), [GitHub link](#)
- J49** Wiebe J., **Misener R.** ROmodel: modeling robust optimization problems in Pyomo. *Optimization & Engineering*, **23**: 1873-1894, 2022. [Video link](#), [GitHub link](#) **Invited for *Robust Optimization* special issue**
- J48** Mistry M., Letsios D., Lee R. M., Krennich G., **Misener R.** Mixed-Integer Convex Nonlinear Optimization with Gradient-Boosted Trees Embedded. *INFORMS Journal on Computing*, **33**: 1103-1119, 2021. [GitHub link](#)
- J47** Thebelt A., Kronqvist J., Mistry M., Lee R. M., Sudermann-Merx N., **Misener R.** ENTMOOT: A Framework for Optimization over Ensemble Tree Models. *Computers & Chemical Engineering*, **151**:107343, 2021. [Video link](#), [GitHub link](#)
- J46** Pistikopoulos E. N., Barbosa-Povoa A., Lee J. H., **Misener R.**, Mitsos A., Reklaitis G. V., Venkatasubramanian V., You F., Gani R. Process Systems Engineering – The Generation Next? *Computers & Chemical Engineering*, **147**:107252, 2021.
- J45** Letsios D., Bradley J. T., Suraj G, **Misener R.**, Page N. Approximate and robust bounded job start scheduling for Royal Mail delivery offices. *Journal of Scheduling*, **24**:237-258, 2021.
- J44** Letsios D., Mistry M., **Misener R.** Exact Lexicographic Scheduling & Approximate Rescheduling, *European Journal of Operational Research*, **290**:469-478, 2021. [GitHub link](#)
- J43** Kronqvist J., **Misener R.** A disjunctive cut strengthening technique for convex MINLP, *Optimization & Engineering*, **22**: 1315-1354, 2021. [GitHub link](#), **Invited for a special issue on *MINLP, dedicated to Marco Duran*, awarded *Rosenbrock Prize* as best paper out of 103 published in 2021**
- J42** Ceccon F., Sirola J. D., **Misener R.** SUSPECT: MINLP Special Structure Detector for Pyomo, *Optimization Letters*, **14**: 801-814, 2020. [GitHub link](#)
Invited article for a special issue in memory of Professor C. A. Floudas
- J41** Letsios D., Baltean-Lugojan R., Ceccon F., Mistry M., Wiebe J., **Misener R.** Approximation Algorithms for Process Systems Engineering. *Computers & Chemical Engineering*, **132**: 106599, 2020.
Invited for a special issue celebrating the *Life & Work of Prof. R.W.H. Sargent*
- J40** Kouyialis G., Wang X., **Misener R.** Symmetry Detection for Quadratic Optimization Using Binary Layered Graphs. *Processes*, **7**: 11, 2019.
Invited for the special issue to *Celebrate the Life & Work of Prof. R.W.H. Sargent*
- J39** Wiebe J., Cecílio I., **Misener R.** Robust optimization for the pooling problem. *Industrial & Engineering Chemistry Research*, **58**:12712-12722, 2019.
Invited for a special issue titled *I&EC Research 2019 Class of Influential Researchers*
- J38** Furini F., Traversi E., Belotti P., Frangioni A., Gleixner A., Gould N., Liberti L., Lodi A., **Misener R.**, Mittelman H., others, QPLIB: A Library of Quadratic Programming Instances, *Mathematical Programming Computation*, **11**:237265, 2019.
- J37** Campos J. S., **Misener R.**, Parpas P. A multilevel analysis of the Lasserre hierarchy, *European Journal of Operational Research*, **277**:32-41, 2019.
- J36** Olofsson S., Hebing L., Niedenführ S., Deisenroth M. P., **Misener R.** GPdoemd: a Python package for design of experiments for model discrimination, *Computers & Chemical Engineering*, **125**:54-70, 2019. **Invited article for a special issue dedicated to PSE 2018**, [GitHub link](#)

- J35** Olofsson S., Mehrian M., Calandra R., Geris L., Deisenroth M. P., **Misener R.** Bayesian Multi-Objective Optimisation with Mixed Analytical and Black-Box Functions: Application to Tissue Engineering, *IEEE Transactions on Biomedical Engineering*, **66**:727 - 739, 2019.
- J34** Wiebe J., Cecilio I., **Misener R.** Data-driven optimization of processes with degrading equipment, *Industrial & Engineering Chemistry Research*, **57**:17177 - 17191, 2018. [GitHub link](#)
- J33** **Misener R.**, Allenby M. C., Fuentes-Garí M., Gupta K., Wiggins T., Panoskaltis N., Pistikopoulos E. N., Mantalaris A. Stem Cell Biomanufacturing under Uncertainty: A Case Study in Optimizing Red Blood Cell Production, *AIChE Journal*, **64**:3011 - 3022, 2018.
The editors invited future chemical engineering leaders to contribute research for Futures Series. Of the 25 researchers appearing in the founding issue, I was 1 of 6 invited to present at a special session in the 2018 AIChE meeting ([weblink](#)).
- J32** Baltean-Lugojan R., **Misener R.**, Piecewise Parametric Structure in the Pooling Problem – from Sparse Strongly-Polynomial Solutions to NP-Hardness, *Journal of Global Optimization*, **71**:655 - 690, 2018. **Invited article for a special issue in memory of Professor C. A. Floudas**, [GitHub link](#)
- J31** Mistry M., Callia D’Iddio A., Huth M., **Misener R.** Satisfiability Modulo Theories for Process Systems Engineering, *Computers & Chemical Engineering*, **113**:98 - 114, 2018.
Invited article for a special issue dedicated to FOCAPO/CPC 2017
- J30** Letsios D., Kouyialis G., **Misener R.** Heuristics with Performance Guarantees for the Minimum Number of Matches Problem in Heat Recovery Network Design, *Computers & Chemical Engineering*, **113**:57 - 85, 2018. **Invited for a special issue in memory of Professor C. A. Floudas**, [GitHub link](#)
- J29** Mehrian M., Guyot Y., Papantoniou I., Olofsson S., Sonnaert M., **Misener R.**, Geris L. Maximizing Neotissue Growth Kinetics in a Perfusion Bioreactor: An *In Silico* Strategy Using Model Reduction and Bayesian Optimization, *Biotechnology & Bioengineering*, **115**:617 - 629, 2018.
- J28** Allenby M. C., **Misener R.**, Panoskaltis N., Mantalaris A. A quantitative three-dimensional (3D) image analysis tool for maximal acquisition of spatial heterogeneity data. *Tissue Engineering Part C: Methods*; **23**:108 - 117, 2017.
- J27** Savvopoulos S. V., **Misener R.**, Panoskaltis N., Pistikopoulos E. N., Mantalaris A. A Personalized Framework for Dynamic Modeling of Disease Trajectories in Chronic Lymphocytic Leukemia. *IEEE Transactions on Biomedical Engineering*; **63**:2396 - 2404, 2016.
- J26** Ceccon F., Kouyialis G., **Misener R.** Using Functional Programming to recognize Named Structure in an Optimization Problem: Application to Pooling. *AIChE Journal*; **62**:3085 - 3095, 2016. [GitHub](#)
Invited article for Tribute to Founders: Roger Sargent. Process Systems Engineering
- J25** Mistry M., **Misener R.** Optimising Heat Exchanger Network Synthesis using Convexity Properties of the Logarithmic Mean Temperature Difference. *Computers & Chemical Engineering*; **94**:1 - 17, 2016. [GitHub link](#)
- J24** Boukouvala F., **Misener R.**, Floudas C. A. Global Optimization Advances in Mixed-Integer Nonlinear Programming, MINLP, and Constrained Derivative-Free Optimization, CDFO. *European Journal of Operational Research*; **252**:701 - 727, 2016.
- J23** Fuentes-Garí M., **Misener R.**, Georgiadis M. C., Kostoglou M., Pistikopoulos E. N., Panoskaltis N., Mantalaris A. Selecting a differential equation cell cycle model for simulating leukemia treatment; *Industrial & Engineering Chemistry Research*; **54**:8847 - 8859, 2015.
- J22** Velliou E., Brito dos Santos S., Papathanasiou M. M., Fuentes-Garí M., **Misener R.**, Panoskaltis N., Mantalaris A., Pistikopoulos E. N. Towards unravelling the kinetics of an Acute Myeloid Leukaemia model system under oxidative and starvation stress: A comparison between two and three dimensional cultures; *Bioprocess & Biosystems Engineering*; **38**:1589 - 1600, 2015.

- J21** Fuentes-Garí M., Velliou E., **Misener R.**, Pefani E., Rende M., Panoskaltsis N., Mantalaris A., Pistikopoulos E. N. A systematic framework for the design, simulation and optimization of personalized healthcare: Making and healing blood; *Computers & Chemical Engineering*; **81**:80 - 93, 2015.
- J20** Fuentes-Garí M., **Misener R.**, García-Münzer D., Velliou E., Georgiadis M. C., Kostoglou M., Pistikopoulos E. N., Panoskaltsis N., Mantalaris A. A mathematical model of sub-population kinetics for the deconvolution of leukaemia heterogeneity. *Journal of The Royal Society Interface*; **12**(108), 2015.
- J19** **Misener R.**, Smadbeck J. B., Floudas C. A. Dynamically-generated cutting planes for mixed-integer quadratically-constrained quadratic programs and their incorporation into GloMIQO 2; *Optimization Methods & Software*; **30**:215 - 249, 2015.
- J18** Velliou E., Brito dos Santos S., Fuentes-Garí M., **Misener R.**, Pefani E., Panoskaltsis N., Mantalaris A., Pistikopoulos E. N. Key environmental stress biomarker candidates for the optimisation of chemotherapy treatment of leukaemia; *Malta Journal of Health Sciences*; **1**:29 - 34, 2014.
- J17** **Misener R.**, Fuentes-Garí M., Rende M., Velliou E., Panoskaltsis N., Pistikopoulos E. N., Mantalaris A. Global Superstructure Optimisation of Red Blood Cell Production in a Parallelised Hollow Fibre Bioreactor, *Computers & Chemical Engineering*; **71**:532 - 553, 2014.
- J16** **Misener R.**, Floudas C. A. ANTIGONE: Algorithms for coNTinuous / Integer Global Optimization of Nonlinear Equations, *Journal of Global Optimization*; **59**:503 - 526, 2014.
- J15** **Misener R.**, Floudas C. A. A framework for globally optimizing mixed-integer signomial programs. *Journal of Optimization Theory & Applications*; **161**:905 - 932, 2014.
- J14** **Misener R.**, Floudas C. A. GloMIQO: Global Mixed-Integer Quadratic Optimizer. *Journal of Global Optimization*; **57**:3 - 50, 2013. **Journal of Global Optimization Best Paper of 2013**
W. David Smith, Jr. Graduate Student Paper Award, 2014
- J13** **Misener R.**, Floudas C. A. Global Optimization of Mixed-Integer Models with Quadratic and Signomial Functions: A Review. *Applied Computational Math.*; **11**:317 - 336, 2012.
- J12** Skjäl A., Westerlund T., **Misener R.**, Floudas C. A. A Generalization of the Classical α BB Convex Underestimation via Diagonal and Non-Diagonal Quadratic Terms. *Journal of Optimization Theory & Applications*; **154**:462 - 490, 2012.
- J11** **Misener R.**, Floudas C. A. Global Optimization of Mixed-Integer Quadratically Constrained Quadratic Programs (MIQCQP) through Piecewise-Linear and Edge-Concave Relaxations. *Mathematical Programming, Series B*; **136**:155 - 182, 2012.
W. David Smith, Jr. Graduate Student Paper Award, 2014
- J10** Li J., **Misener R.**, Floudas C. A. Scheduling of Crude Oil Operations under Demand Uncertainty: A Robust Optimization Framework with Global Optimization. *AIChE Journal*; **58**:2373 - 2396, 2012.
- J09** Baliban R. C., Elia J. A., **Misener R.**, Floudas C. A. Global optimization of a MINLP process synthesis model for thermochemical based conversion of hybrid coal, biomass, and natural gas to liquid fuels. *Computers & Chemical Engineering*; **42**: 64 - 86; 2012.
- J08** Li J., **Misener R.**, Floudas C. A. Continuous-Time Modeling and Global Optimization Approach for Scheduling of Crude Oil Operations. *AIChE Journal* **58**: 205 - 226; 2012.
- J07** **Misener R.**, Thompson J. P., Floudas C. A. APOGEE: Global Optimization of Standard, Generalized, and Extended Pooling Problems via Linear and Logarithmic Partitioning Schemes. *Computers & Chemical Engineering* **35**: 876 - 892; 2011.
- J06** **Misener R.**, Gounaris C. E., Floudas C. A. Mathematical Modeling and Global Optimization of Large-Scale Extended Pooling Problems with the (EPA) Complex Emissions Constraints. *Computers & Chemical Engineering* **34**: 1432 - 1456; 2010.

- J05 Misener R.**, Floudas C. A. Global Optimization of Large-Scale Generalized Pooling Problems: Quadratically Constrained MINLP Models. *Industrial & Engineering Chemistry Research* **49**: 5424 - 5438; 2010.
- J04 Misener R.**, Floudas C. A. Piecewise-Linear Approximations of Multidimensional Functions. *Journal of Optimization Theory & Applications* **145**: 120 - 147; 2010.
- J03 Misener R.**, Floudas C. A. Advances for the Pooling Problem: Modeling, Global Optimization, & Computational Studies. *Applied & Computational Math.* **8**: 3 - 22; 2009.
- J02 Misener R.**, Gounaris C. E., Floudas C. A. Global Optimization of Gas Lifting Operations: A Comparative Study of Piecewise Linear Formulations. *Industrial & Engineering Chemistry Research* **48**: 6098 - 6104; 2009.
- J01 Gounaris C. E., Misener R.**, Floudas C. A. Computational Comparison of Piecewise-Linear Relaxations for Pooling Problems. *Industrial & Engineering Chemistry Research* **48**: 5742 - 5766; 2009.

COMPUTER SCIENCE CONFERENCE PROCEEDINGS

- C16 Boyne T.**, Campos J. S., Langdon B. D., Qing J., Xie Y., Zhang S., Tsay C., **Misener R.**, Davies D. W., Jelfs K. E., Boyall S., Dixon T. M., Schrecker L., Folch J. P. The Catechol Benchmark: Time-series Solvent Selection Data for Few-shot Machine Learning. *Proceedings of the 39th Conference on Neural Information Processing Systems (NeurIPS), Datasets & Benchmarks Track*, 2025.
CORE A*, Acceptance Rate = 24.5%
- C15 Boyne T.**, Folch J. P., Lee R. M., Shafei B., **Misener R.** BARK: A Fully Bayesian Tree Kernel for Black-box Optimization *Proceedings of the 42st International Conference on Machine Learning (ICML)*, 2025.
CORE A*, Acceptance Rate = 26.9%
- C14 Calame A.**, **Misener R.**, Knowles J. Improving Deep Optimisation for the Multi-dimensional Knapsack Problem using Elastic Weight Consolidation. *Proceedings of the Genetic and Evolutionary Computation Conference Companion (GECCO)*, 2025.
CORE A
- C13 Odgers J.**, Sedgwick R., Kappatou C., **Misener R.**, Filippi S. Weighted-Sum Gaussian Process Latent Variable Models *Proceedings of the 28th International Conference on Artificial Intelligence and Statistics (AISTATS)*, 2025.
CORE A, Acceptance Rate = 31.3%
- C12 Folch J. P.**, Tsay C., Lee R. M., Shafei B., Ormaniec W., Krause A., van der Wilk M., **Misener R.**, Mutný, M. Transition constrained Bayesian optimization via Markov decision processes. *Proceedings of the 38th Conference on Neural Information Processing Systems (NeurIPS)*, 2024.
CORE A*, Acceptance Rate = 25.8%, [GitHub link](#)
- C11 Hojny C.***, Zhang S.*, Campos J. S., **Misener R.** Verifying message-passing neural networks via topology-based bounds tightening. *Proceedings of the 41st International Conference on Machine Learning (ICML)*, 2024. * Authors contributed equally. CORE A*, Acceptance Rate = 27%, [GitHub link](#)
- C10 Zhang S.**, Campos J. S., Feldmann C., Walz D., Sandfort F., Mathea M., Tsay C., **Misener R.** Optimizing over trained GNNs via symmetry breaking. *Proceedings of the 37th Conference on Neural Information Processing Systems (NeurIPS)*, 2023.
CORE A*, Acceptance Rate = 26%, [Video link](#), [GitHub link](#)
- C09 Thebelt A.**, Tsay C., Lee R. M., Sudermann-Merx N., Walz D., Shafei B., **Misener R.** Tree ensemble kernels for Bayesian optimization with known constraints over mixed-feature spaces. *Proceedings of the 36th Conference on Neural Information Processing Systems (NeurIPS)*, 2022.
CORE A*, Acceptance Rate = 26%, [Video link](#), [GitHub link](#)
- C08 Folch J. P.**, Zhang S., Lee R. M., Shafei B., Walz D., Tsay C., van der Wilk M., **Misener R.** SnAKE: Bayesian Optimization with Pathwise Exploration. *Proceedings of the 36th Conference on Neural Information Processing Systems (NeurIPS)*, 2022.
CORE A*, Acceptance Rate = 26%, [Video link](#), [GitHub link](#)

- C07** Tsay C., Kronqvist J., Thebelt A., **Misener R.** Partition-Based Formulations for Mixed-Integer Optimization of Trained ReLU Neural Networks. *Proceedings of the 35th Conference on Neural Information Processing Systems (NeurIPS)*, 2021. CORE A*, Acceptance Rate = 26%, [Video link](#), [GitHub link](#)
- C06** Kronqvist J., **Misener R.**, Tsay C. Between steps: Intermediate relaxations between big-M and convex hull formulations. *Proceedings of the International Conference on Integration of Constraint Programming, Artificial Intelligence, and Operations Research (CPAIOR)*, 2021. CORE B Acceptance Rate = 40%, [Video link](#), **Distinguished Paper Award** (1 award for 30 accepted papers)
- C05** Cyras K., Karamlou A., Lee M., Letsios D., **Misener R.**, Toni F. AI-assisted Schedule Explainer for Nurse Rostering. *Proceedings of the 19th International Conference on Autonomous Agents and Multi-Agent Systems (AAMAS)*, 2020. CORE A*, Demo Track, **Best (Innovative) Demo**, [link](#)
- C04** Botoeva E., Kronqvist J., Kouvaros P., Lomuscio A., **Misener R.** Efficient Verification of ReLU-based Neural Networks via Dependency Analysis. *Proceedings of the 34th AAAI Conference on Artificial Intelligence (AAAI)*, 2020. CORE A*, Acceptance Rate = 21%.
- C03** Bradley J. T., Letsios D., **Misener R.**, Page N. Approximating Bounded Job Start Scheduling with Application in Royal Mail Deliveries under Uncertainty. *Proceedings of the 13th Conference on Combinatorial Optimization & Applications (COCO)*, 2019. CORE B, Acceptance Rate \approx 50%.
- C02** Cyras K., Letsios D., **Misener R.**, Toni F. Argumentation for Explainable Scheduling. *Proceedings of the 33rd AAAI Conference on Artificial Intelligence (AAAI)*, 2019. CORE A*, Acceptance Rate = 16%. We were given an oral presentation.
- C01** Olofsson S., Deisenroth M. P., **Misener R.** Design of Experiments for Model Discrimination Hybridising Analytical and Data-Driven Approaches. *Proceedings of the 35th International Conference on Machine Learning (ICML)*, PMLR **80**:3905 - 3914, 2018. CORE A*, Acceptance Rate = 25%. We were given a **long, 20 min** presentation

ENGINEERING CONFERENCE PROCEEDINGS

- E27** **Misener R.**, Biegler L. Formulating data-driven surrogate models for process optimization. *Foundations of Computer Aided Process Operations/Chemical Process Control, FOCAPO/CPC*. Tucson, AZ; 2023.
- E26** Wiebe J., Misener R. ROmodel: A Python Robust Optimization Modeling Toolbox. In Türkay & Gani (Eds), Proceedings of the 31st European Symposium on Computer Aided Process Engineering. Vol. 50 of *Computer-Aided Chemical Engineering*. Istanbul, TR; 2021, pp 683 - 688.
- E25** Thebelt A., Kronqvist J., Lee R. M., Sudermann-Merx N., **Misener R.** Global optimization with ensemble machine learning models. In Pierucci et al. (Eds), Proceedings of the 30th European Symposium on Computer Aided Process Engineering. Vol. 48 of *Computer-Aided Chemical Engineering*. Milan, IT; 2020, pp 1981 - 1986.
- E24** Wiebe J., Cecilio I., **Misener R.** The robust pooling problem. In Kiss et al. (Eds), Proceedings of the 29th European Symposium on Computer Aided Process Engineering. Vol. 46 of *Computer-Aided Chemical Engineering*. Eindhoven, NL; 2019, pp 907 - 912.
- E23** Olofsson S., Deisenroth M. P., **Misener R.** Optimal Design of Experiments for Model Discrimination using Gaussian Process Surrogate Models. In Eden et al. (Eds), Proceedings of the 13th International Symposium on Process Systems Engineering. Vol. 44 of *Computer-Aided Chemical Engineering*. San Diego, CA; 2018, pp 847 - 852.
- E22** Wesselhoeft C., Ham D., **Misener R.** Algorithms for Mixed-Integer Optimization Constrained by Partial Differential Equations. In Eden et al. (Eds), Proceedings of the 13th International Symposium on Process Systems Engineering. Vol. 44 of *Computer-Aided Chemical Engineering*. San Diego, CA; 2018, pp 799 - 804. [GitHub link](#)

- E21** Olofsson S., Mehrian M., Geris L., Calandra R., Deisenroth M. P., **Misener R.** Bayesian Multi-Objective Optimisation of Neotissue Growth in a Perfusion Bioreactor Set-Up. In Espuña et al. (Eds), Proceedings of the European Symposium on Computer Aided Process Engineering. Vol. 39 of *Computer-Aided Chemical Engineering*. Barcelona, ES; 2017, pp 2155 - 2160.
- E20** Mistry M., **Misener R.** Integrating Mixed-Integer Optimisation & Satisfiability Modulo Theories: Application to Scheduling. In Maravelias et al. (Eds), Foundations of Computer Aided Process Operations/Chemical Process Control, FOCAPO/CPC. Tucson, AZ; 2017.
- Invited article for the Young Investigator Session**
- E19** Kouyialis G., **Misener R.** Detecting Symmetry in Designing Heat Exchanger Networks. In Maravelias et al. (Eds), Foundations of Computer Aided Process Operations/Chemical Process Control, FOCAPO/CPC. Tucson, AZ; 2017.
- E18** Allenby M. C., Tahlawi A., **Misener R.**, Brito dos Santos S., Mantalaris A., Panoskaltis N. Spatiotemporal Mapping of Erythroid, Stromal, and Osteogenic Niche Formation to Support Physiologic Red Cell Production in a 3-Dimensional Hollow Fibre Perfusion Bioreactor. *Blood*, **128**; 2016; p 3885.
- E17** Ulmasov D., Baroukh C., Chachuat B., Deisenroth M. P., **Misener R.** Bayesian Optimisation with Dimension Scheduling Algorithm: Application to Biological Systems. In Kravanja, Bogataj (Eds), 26th European Symposium on Computer Aided Process Engineering. Vol. 38 of *Computer-Aided Chemical Engineering*. Portorož, SI; 2016; pp 1051 - 1056.
- E16** Fuentes-Garí M., Zemenides S., **Misener R.**, Georgiadis M. C., Pistikopoulos E. N., Mantalaris A., Panoskaltis N. Use of Mathematical Modelling Indicates That Patients Treated for Acute Myeloid Leukaemia (AML) Are Undertreated When Ideal Body Weight Is Used to Dose Chemotherapy. *Blood*, **126**; 2015; p 4522.
- E15** Allenby M. C., Tahlawi A., Brito Dos Santos S., Hwang Y. S., **Misener R.**, Panoskaltis N., Mantalaris A. Development of an ex vivo bone marrow mimicry microenvironment in a novel 3D hollow fibre bioreactor. *Experimental Hematology*; **43**; 2015; p S51.
- E14** Fuentes-Garí M., **Misener R.**, Georgiadis M. C., Kostoglou M., Pistikopoulos E. N., Panoskaltis N., Mantalaris A. Chemotherapy Optimization in Leukemia: Selecting the Right Mathematical Models for the Right Biological Processes. 9th IFAC Symposium on Biological & Medical Systems. Vol. 48 of *IFAC-PapersOnLine*. Berlin, DE; 2015; pp 534 - 539.
- E13** Allenby M. C., Tahlawi A., Brito Dos Santos S., **Misener R.**, Hwang Y., Panoskaltis N., Mantalaris A. Development of a hematopoietic microenvironment for the production of red blood cells (RBCs) in a novel 3D hollow fibre bioreactor. *Tissue Engineering Part A*. 21, 2015; pp S15 - S16.
- E12** Savvopoulos S. V., **Misener R.**, Panoskaltis N., Pistikopoulos E. N., Mantalaris A. Global Sensitivity Analysis for a Dynamic Model of Chronic Lymphocytic Leukemia Disease Trajectories. In Gernaey et al. (Eds), 12th International Symposium on Process Systems Engineering. Vol. 37 of *Computer-Aided Chemical Engineering*. Copenhagen, DK; 2015; pp 185 - 190.
- E11** Fuentes-Garí M., **Misener R.**, Pefani E., García-Münzer D., Kostoglou M., Georgiadis M. C., Panoskaltis N., Pistikopoulos E. N., Mantalaris A. Cell cycle model selection for leukemia and its impact in chemotherapy outcomes. In Gernaey et al. (Eds), 12th International Symposium on Process Systems Engineering. Vol. 37 of *Computer-Aided Chemical Engineering*. Copenhagen, DK; 2015; pp 2159 - 2164
- E10** **Misener R.**, Allenby M. C., Fuentes-Garí M., Rende M., Velliou E., Panoskaltis N., Pistikopoulos E. N., Mantalaris A. Optimisation under uncertainty for a bioreactor that produces red blood cells. *J. Tissue Eng. Regen. Med.*; 8; 2014; p 481.
- E09** Fuentes-Garí M., **Misener R.**, García-Münzer D., Velliou E., Panoskaltis N., Pistikopoulos E. N., Mantalaris A. Development and experimental validation of cyclin-based population balance model of the cell cycle in leukaemia cell lines. *J. Tissue Eng. Regen. Med.*; 8; 2014; p 489.

- E08** Velliou E., Brito Dos Santos S., Fuentes-Garí M., **Misener R.**, Panoskaltis N., Pistikopoulos E. N., Mantalaris A. Evolution of an AML model system under oxidative and starvation stress: A comparison between two and three dimensional cultures. *J. Tissue Eng. Regen. Med.*; 8; 2014; p 483.
- E07** Velliou E., Fuentes-Garí M., **Misener R.**, Pefani E., Rende M., Panoskaltis N., Pistikopoulos E. N., Mantalaris A. A framework for the design, modeling and optimization of biomedical systems. In Eden et al. (Ed.), *Foundations of Computer-Aided Process Design*. Vol. 34 of *Computer-Aided Chemical Engineering*. Cle Elum, WA; 2014; pp 225 - 236.
- E06** **Misener R.**, Chin J., Lai M., Fuentes-Garí M., Velliou E., Panoskaltis N., Pistikopoulos E. N., Mantalaris A. Robust Superstructure Optimisation of a Bioreactor that Produces Red Blood Cells. In Klemeš, Varbanov, Liew (Ed.), *24th European Symposium on Computer Aided Process Engineering*. Vol. 33 of *Computer-Aided Chemical Engineering*. Budapest, Hungary; 2014; pp 91 - 96.
- E05** Skjäl A., Westerlund T., **Misener R.**, Floudas C. A. A Generalization of Classical α BB Underestimation to Include Bilinear Terms. In Bogle, Fairweather (Ed.), *22nd European Symposium on Computer Aided Process Engineering*. Vol. 30 of *Computer-Aided Chemical Engineering*. London, UK; 2012; pp 1202 - 1206.
- E04** **Misener R.**, Floudas C. A. Global Optimization of Large-Scale Extended and Generalized Pooling Problems: Mixed-Integer Nonlinearly Constrained Models. *Global Optimization Workshop*, Toulouse, FR; 2010; pp 89 - 92.
- E03** **Misener R.**, Gounaris C. E., Floudas C. A. Global Optimization and Parametric Analysis of Large-Scale Extended Pooling Problems. In Pierucci, Ferraris (Ed.), *20th European Symposium on Computer Aided Process Engineering*. Vol. 28 of *Computer-Aided Chemical Engineering*. Naples, IT; 2010; pp 847 - 852.
- E02** **Misener R.**, Gounaris C. E., Floudas C. A. Advances In Global Optimization for Standard, Generalized, and Extended Pooling Problems with the (EPA) Complex Emissions Model Constraints. *Foundations of Computer-Aided Process Design*. Breckenridge, CO; 2009; pp 1053 - 1073.
- E01** **Misener R.**, Gounaris C. E., Floudas C. A. Multidimensional Piecewise-Affine Approximations for Gas Lifting and Pooling Applications. *Foundations of Computer-Aided Process Design*. Breckenridge, CO; 2009; pp 887 - 896.

COMPUTER SCIENCE WORKSHOP PAPERS

- W04** Xie Y., Zhang S., Qing J., **Misener R.**, Tsay C. Molecular design using graph Bayesian optimization with shortest-path kernels. *ICLR GEM Workshop*, 2025.
- W03** Folch J. P., Odgers J., Zhang S., Lee R. M., Shafei B., Walz D., Tsay C., van der Wilk M., **Misener R.** Practical Path-based Bayesian Optimization. *NeurIPS 2023 Workshop on Adaptive Experimental Design and Active Learning in the Real World (RealML-2023)*, 2023.
- W02** Stoddart C., Shrack L., Sserunjogi R., Abdul-Ganiy U., Bainomugisha E., Okure D., **Misener R.**, Folch J. P., Sedgwick R. Gaussian Processes for Monitoring Air-Quality in Kampala. *NeurIPS 2023 Workshop on Tackling Climate Change with Machine Learning: Blending New and Existing Knowledge Systems*, 2023.
- W01** Sedgwick R., Goertz J., **Misener R.**, Stevens M, van der Wilk M. [Design of Experiments for Verifying Biomolecular Networks](#). *Machine Learning for Molecules NeurIPS Workshop*, 2020. [Video link](#)

NUMERICAL SOFTWARE & MATHEMATICAL MODELS

The following implementations are primarily written by me. Implementations of my group's optimisation algorithms, i.e. code primarily written by my team, are on our [GitHub](#) account.

NUMERICAL SOFTWARE _____

- S03 Misener R.**, Floudas C. A. [ANTIGONE](#): Algorithms for coNTinuous / Integer Global Optimization of Nonlinear Equations; 2013. *Commercial through Princeton & GAMS Development Corp.*
- S02 Misener R.**, Floudas C. A. [GloMIQO](#): Global Mixed-Integer Quadratic Optimizer; 2012. *Commercial through Princeton & GAMS Development Corp.*
- S01 Misener R.**, Thompson J. P., Floudas C. A. Algorithms for Pooling-problem global Optimization in GEneralized and Extended classes ([APOGEE](#)); 2010. *Freely available tool*

MATHEMATICAL MODELS

- M02 Misener R.**, Floudas C. A. [Generalized Pooling Problem](#). Available from [CyberInfrastructure for MINLP](#); 2011.
- M01 Misener R.**, Gounaris C. E., Floudas C. A. [Extended Pooling Problem with the Summer Time \(EPA\) Complex Emissions Constraints](#). Available from [CyberInfrastructure for MINLP](#); 2010.

PRESS & PUBLICATIONS WRITTEN FOR A GENERAL AUDIENCE

PRESS ABOUT MY RESEARCH & TEACHING

- P9** *Machine learning models to support chemical R&D recognised with Best Paper Award.* [Imperial News](#), 2024.
- P8** *Professor Ruth Misener Honoured with 2023 BCS Roger Needham Award.* [Imperial News](#), 2023.
- P7** *Major contribution by Imperial undergraduate to open-source research software.* [Imperial News](#), 2022.
- P6** *Machine learning techniques from Imperial & BASF advance experimental design.* [Imperial News](#), 2022.
- P5** *Treasury Minister visits Imperial for launch of apprenticeship programmes.* [Imperial News](#), 2022.
- P4** *Imperial & BASF in major partnership to advance future of chemical production.* [Imperial News](#), 2022.
- P3** *Imperial scoops three new Royal Academy of Engineering research chairs.* [Imperial News](#), 2022.
- P2** *Schlumberger Collaboration.* [Imperial News](#) ([link](#)), [Schlumberger Careers News](#) ([link](#)), 2021.
- P1** *Decision making under uncertainty.* [Imperial Long Read](#) ([link](#)), Online event hosted by Imperial Business Partners ([YouTube](#)), [Imperial News](#) ([link](#)), 2021.

WRITTEN BY RUTH

- G5 Misener R.** Imperial researchers publish 17 papers at NeurIPS 2022 conference. [Imperial News](#), 2022.
- G4 Misener R.** Department of Computing MSc student honoured for her joint work with Royal Mail. [Imperial News](#), 2019.
- G3 Misener R.** Department of Computing researchers selected to present research in Parliament. [Imperial News](#), 2019.
- G2 Misener R.** Christodoulos Achilleus Floudas. *SIAG/OPT Views and News*. **24**(1): 12 - 16, 2016.
- G1 Misener R.** Deterministic Global Optimisation at CPSE: Models, Algorithms, and Software. Centre for Process Systems Engineering Newsletter, Issue 10, 2014.

KEYNOTE / PLENARY PRESENTATIONS

UPCOMING

- K28 Misener R.** Optimizing over graphs: Challenges, Formulations, and Applications *SIAM Conference on Optimization*. Plenary. Edinburgh, UK, 06/2026.

PAST

- K27 Misener R.** Bayesian optimization for mixed feature spaces using tree kernels and graph kernels. *International Conference on Operations Research (OR 2025)*. Semi-Plenary. Bielefeld, DE, 09/2025.

- K26 Misener R.** Bayesian optimization for mixed feature spaces using tree kernels and graph kernels. *International Conference on Continuous Optimization (ICCOPT 2025)*. Semi-Plenary. Los Angeles, USA, 07/2025.
- K25 Misener R.** Bayesian optimization for mixed feature spaces using tree kernels and graph kernels. *22nd Conference on Advances in Continuous Optimization (EUROPT 2025)*. Plenary. Southampton, UK, 06/2025.
- K24 Misener R.** Bayesian optimization for mixed feature spaces using tree kernels and graph kernels. *9th AIROYoung Workshop*. Plenary. Pavia, IT, 02/2025.
- K23 Misener R.** Optimal decision-making problems with trained surrogate models embedded. *Learning and Intelligent Optimization Conference (LION 18)*. Plenary. Ischia Island, IT, 06/2024.
- K22 Misener R.** Autonomous research machines: Self-optimizing new chemistry. *The Alan Turing Institute Workshop on Bayesian Optimisation with Multiple Objectives: Open Challenges for Machine Learning and Optimisation*. Keynote. University of Warwick, 02/2023.
- K21 Biegler L., Misener R.** Integration of Data-Driven Techniques in Mathematical Optimization. *Foundations of Computer Aided Process Operations / Chemical Process Control (FOCAPO/CPC)*. Joint keynote. San Antonio, TX, 01/2023.
- K20 Misener R.** Between formulations or: How I Learned to Stop Worrying and Love Parameters. *Workshop on Global Optimization (HUGO)*. Plenary. Szeged, HU, 09/2022.
- K19 Misener R.** OMLT: Optimization and Machine Learning Toolkit. *Hong Kong Tech Forum on Grand Challenges in Data Science and Artificial Intelligence*. Virtual invited talk, 07/2022.
- K18 Misener R.** OMLT: Optimization and Machine Learning Toolkit. *Process Systems Engineering (PSE 2021+)*. Keynote. Kyoto, JP, 06/2022.
- K17 Misener R.** Computational Mixed-Integer Nonlinear Optimization, *31st European Conference on Operational Research (EURO 2021)*. Semi-plenary. Athens, GR, 07/2021.
- K16 Misener R.** Numerical approaches to mixed-integer nonlinear optimization, *7th IFAC Symposium on Nonlinear Model Predictive Control (NMPC 2021)*. Plenary. Bratislava, SK, 07/2021. [Video link](#)
- K15 Thebelt A., Kronqvist J., Mistry M., Lee R. M., Sudermann-Merx N., Misener R.** ENTMOOT: A Framework for Optimization over Ensemble Tree Models. *Virtual AIChE Annual Meeting*, Computer & Systems Technology Division (10e) Plenary. 11/2020. [Video link](#)
- K14 Misener R.** Mixing analytical and data-driven optimization: Application to the process industries, *30th European Symposium on Computer Aided Process Engineering (ESCAPE 2020)*. Online Plenary. 09/2020.
- K13 Misener R.** Developing spatial branch & bound solvers, *Oberwolfach MINLP Workshop*. Opening Plenary. Oberwolfach, DE, 06/2019.
- K12 Misener R.** Mixed-integer nonlinear optimisation for energy efficiency, *1st International Young Professionals Conference on Process Engineering (YCOPE)*. Plenary. Max Planck Institute, Magdeburg, DE, 03/2019.
- K11 Misener R.** Gaussian Processes for Hybridizing Analytical & Data-Driven Decision-Making, *AIChE Annual Meeting*. Presentation as a part of [AIChE's 110 Year Celebration](#). Pittsburgh, USA; 10/2018.
- K10 Misener R.** The pooling problem with a view towards gas transport, *Conference on the Mathematics of Gas Transport*. Plenary. Berlin, DE; 10/2018.
- K09 Misener R., Mitsos A.** Process Systems Engineering Optimization: Mixed-Integer Nonlinear Programming & Beyond, *Process Systems Engineering (PSE-2018)*. Joint keynote. San Diego, CA, 07/2018.
- K08 Misener R.** Optimisation for energy efficiency, *Department of Computing Research Associate Symposium*. Keynote. Imperial, 06/2018.

- K07 Misener R.** Approximation Algorithms for Process Systems Engineering, *28th European Symposium on Computer Aided Process Engineering (ESCAPE 2018)*. Keynote. Graz, AT, 06/2018.
- K06 Misener R.** Online generation via offline selection of strong linear cuts from QP SDP relaxation, *15th International Conference on Computational Management Science (CMS 2018)*. Semi-plenary. Trondheim, NO, 05/2018.
- K05 Misener R.** Online generation via offline selection of strong linear cuts from QP SDP relaxation, *SCIP Workshop*. Plenary. Aachen, DE, 03/2018.
- K04 Misener R.** Optimisation under Uncertainty: Engineering & Life, *Royal Academy of Engineering Fellows' Day*. Keynote. London, UK, 02/2018.
- K03 Misener R.** Optimisation for Gradient Boosted Trees with Risk Control, *Annual Meeting of the Society for Industrial & Applied Mathematics (SIAM), UK & Republic of Ireland Section (UKIE)*. Plenary. Southampton, UK, 01/2018.
- Sponsored by the Institute of Mathematics & its Applications (IMA)**
- K02 Misener R.** Designing Energy-Efficient Heat Recovery Networks using Mixed-Integer Nonlinear Optimisation, *16th International Symposium on Experimental Algorithms*. Plenary. London, UK, 06/2017.
- K01 Misener R.** Making and Healing Blood: An Engineer's Approach, *Royal Academy of Engineering Research Forum*. Keynote. London, UK, 09/2013.

INVITED SEMINARS

- S51 Misener R.** Bayesian optimization for mixed feature spaces using tree kernels and graph kernels. Department of Mathematics, University of Edinburgh; 03/2025.
- S50 Misener R.** Autonomous research machines: Self-optimising new chemistry. AI Fun with ELLIS Seminar Series, Manchester Centre for AI Fundamentals, University of Manchester; 01/2025.
- S49 Misener R.** Verifying message-passing neural networks via topology-based bounds tightening. EURO Online Seminar Series on OR and Machine Learning; Virtual, 10/2024.
- S48 Misener R.** Autonomous research machines: Self-optimizing new chemistry. Purdue University Mellichamp Lecture; 10/2024.
- S47 Misener R.** Autonomous research machines: Self-optimizing new chemistry. Instituto Superior Técnico Lisboa, American Corner Seminar; 05/2024.
- S46 Misener R.** Bayesian optimization & design of experiments. Society of Chemical Industry Public Lecture (Virtual); 03/2024.
- S45 Misener R.** OMLT: Optimization and Machine Learning Toolkit. ExxonMobil Modeling, Optimization, & Data Science Technical Community Meeting Seminar (Virtual); 09/2023.
- S44 Misener R.** Autonomous research machines: Self-optimizing new chemistry. Dow Data Science Seminar (Virtual); 05/2023.
- S43 Misener R.** Just Relax. Imperial College London Inaugural Lecture; 03/2023. [Video link](#)
- S42 Misener R.** Between formulations or: How I Learned to Stop Worrying and Love Parameters. Cornell Learning Machines Seminar; 02/2023.
- S41 Misener R.** Between formulations or: How I Learned to Stop Worrying and Love Parameters. Princeton University Operations Research & Financial Engineering Seminar; 02/2023.
- S40 Misener R.** Autonomous research machines: Self-optimizing new chemistry. Princeton University Saville Lecture; 02/2023.
- S39 Misener R.** Bayesian optimization & design of experiments, University of Greenwich Leslie Comrie Seminar; 11/2022.

- S38 Misener R.** Scheduling & rescheduling with application to Royal Mail delivery, Research Science Amazon Transportation Services (Virtual); 10/2022.
- S37 Misener R.** Bayesian optimization & design of experiments, [PREMIERE Webinar Series](#); 10/2022.
- S36 Misener R.** OMLT: Optimization and Machine Learning Toolkit. Process, Material, & System Modeling Technical Section Meeting, Aspen Technology, Inc.; 10/2022.
- S35 Misener R.** OMLT: Optimization and Machine Learning Toolkit. Process, Material, & System Modeling Technical Section Meeting, P&G; 04/2022.
- S34 Misener R.** OMLT: Optimization and Machine Learning Toolkit. Operations Research & Financial Engineering, Princeton University; 03/2022.
- S33 Misener R.** Between formulations or: How I Learned to Stop Worrying and Love Parameters. Operations Research Centre, MIT; 03/2022.
Joint with Campos, Ceccon, Haddad, Jalving, Kronqvist, Laird, Parpas, Thebelt, Tsay
- S32 Misener R.** Artificial intelligence approaches towards hybridizing analytical & data-driven decision-making. Department of Chemical Engineering, UT Austin; 09/2021.
Joint work with the Computational Optimisation Group
- S31 Misener R.** Artificial intelligence approaches towards hybridizing analytical & data-driven decision-making. Department of Chemical Engineering, UC Berkeley ; 08/2021.
Joint work with the Computational Optimisation Group
- S30 Misener R.** Partition-based formulations for mixed-integer optimization of trained ReLU neural networks. Mathematics, Physics and Machine Learning Seminar Series, Instituto Superior Técnico; Invited by Prof J Mourão; 06/2021. *Joint work with C Tsay, J Kronqvist, A Thebelt, [Video link](#)*
- S29 Misener R.** Partition-based formulations for mixed-integer optimization of trained ReLU neural networks. Machine Learning NeEDS Mathematical Optimization Online Seminar Series; Invited by Prof D Romero; 04/2021. *Joint work with C Tsay, J Kronqvist, A Thebelt, [Video link](#)*
- S28 Misener R.** Partial Lasserre relaxation for sparse Max-Cut. Discrete Optimization Talks; Invited by Profs A Kazachkov & E Khalil; 04/2021. *Joint work with JS Campos, P Parpas, [Video link](#)*
- S27 Misener R.** Approximation algorithms for process systems engineering. Enterprise-wide Optimization Seminar Series, Center for Advanced Process Decision-making, Carnegie Mellon University; Invited by Prof C Gounaris; 03/2021. *Joint work with the Computational Optimisation Group*
- S26 Misener R.** Scoring positive semidefinite cutting planes for quadratic optimization via trained neural networks. School of Mathematics, Cardiff University; Invited by Dr T Oertel; 12/2019.
Joint work with R Baltean-Lugojan, P Bonami, A Tramontani
- S25 Misener R.** Artificial intelligence approaches towards hybridizing analytical & data-driven decision-making. Institute for Chemical and Bioengineering, ETH Zürich; Invited by Prof P Arosio; 11/2019.
Joint work with the Computational Optimisation Group
- S24 Misener R.** Artificial intelligence approaches towards hybridizing analytical & data-driven decision-making. Department of Chemical Engineering, McMaster University, Hamilton, Ontario; Invited by Prof K Khan; 10/2019. *Joint work with the Computational Optimisation Group*
- S23 Misener R.** Scoring positive semidefinite cutting planes for quadratic optimization via trained neural networks. Department of Mathematics and Statistics, McGill University, Montréal; Invited by Prof H Darmon; 10/2019. *Joint work with R Baltean-Lugojan, P Bonami, A Tramontani*
- S22 Misener R.** Scheduling and rescheduling: Explainability, methods, and industrial applications. Centre de Recherches Mathématiques, Polytechnique Montréal, Montréal; Invited by Prof A Lodi & Prof B Shepherd; 10/2019. *Joint work with JT Bradley, K Cyras, D Letsios, N Page, F Toni*

- S21 Misener R.** Approximation algorithms for process systems engineering. Department of Chemical Engineering, Carnegie Mellon University, Pittsburgh; Invited by Prof L Biegler; 03/2019.
Joint work with D Letsios, G Kouyialis
- S20 Misener R.** Online generation via offline selection: Low dimensional linear cuts from QP SDP relaxation. Department of Industrial and Systems Engineering, University of Wisconsin, Madison; Invited by Prof J Linderoth; 12/2018.
Joint work with R Baltean-Lugojan, P Bonami, A Tramontani
- S19 Misener R.** Gaussian Processes for Hybridizing Analytical & Data-Driven Decision-Making. Department of Chemical Engineering, University of Wisconsin, Madison; Invited by Prof V Zavala; 12/2018.
Joint work with S Olofsson, J Wiebe, I Cecilio, MP Deisenroth
- S18 Misener R.** Gaussian Processes for Hybridizing Analytical & Data-Driven Decision-Making. School of Chemical & Biomolecular Engineering, Georgia Institute of Technology, Atlanta; 09/2018.
Joint with Olofsson, Wiebe, Cecilio, Deisenroth, Mellichamp Distinguished Lecture
- S17 Misener R.** Learning-based Cutting Plane Approximation of Quadratic Programming Convex (SDP) Relaxations. Institute of Information Engineering, Automation & Mathematics, Slovak University of Technology, Bratislava; Invited by Prof R Paulen; 09/2018.
Joint work with R Baltean-Lugojan, P Bonami, A Tramontani
- S16 Misener R.** Lexicographic Optimisation for Rescheduling. LIX, Laboratoire d'Informatique de l'École Polytechnique; Invited by Dr C D'Ambrosio; 07/2018.
Joint work with D Letsios
- S15 Misener R.** Optimisation for Gradient Boosted Trees with Risk Control. Department of Chemical Engineering, RWTH Aachen, DE; Invited by Prof A Mitsos; 03/2018.
Joint work with M Mistry, D Letsios, RM Lee, G Krennich
- S14 Misener R.** Optimisation for Gradient Boosted Trees with Risk Control. Mathematical Institute, University of Oxford, UK; Invited by Prof C Cartis; 02/2018.
Joint work with M Mistry, D Letsios, RM Lee, G Krennich
- S13 Misener R.** Heuristics with Performance Guarantees for the Minimum Number of Matches in Heat Recovery Networks. School of Chemical Engineering & Analytical Science, University of Manchester, UK; Invited by Dr J Li; 02/2018.
Joint work with D Letsios, G Kouyialis
- S12 Misener R.** Lexicographic Optimization for Rescheduling. Department of Econometrics & Operations Research, Tilburg University, NL; Invited by Prof E de Klerk; 12/2017. *Joint work with D Letsios*
- S11 Misener R.** Lexicographic Optimization for Rescheduling. Royal Mail Data Science Group, UK; Invited by Dr J Bradley; 12/2017.
Joint work with D Letsios
- S10 Misener R.** Mixed-Integer Nonlinear Optimisation: Energy Efficiency Applications. School of Mathematics, University of Birmingham, UK; Invited by Prof M Kočvara; 11/2016.
Joint work with R Baltean-Lugojan, F Ceccon, M Mistry
- S09 Misener R.** Mixed-Integer Nonlinear Optimisation: Energy Efficiency Applications. Department of Chemical Engineering, University of Surrey, UK; Invited by Dr E Velliou; 10/2016.
Joint work with R Baltean-Lugojan, F Ceccon, M Mistry
- S08 Misener R.** Implementing algorithmic advances in mixed-integer nonlinear optimisation. Department of Mathematics, London School of Economics, UK; Invited by Prof G Zambelli; 01/2016.
- S07 Misener R.** Mixed-Integer Nonlinear Optimisation: Energy Efficiency Applications. School of Mathematics, University of Edinburgh, UK; Invited by Dr A Grothey & Prof K McKinnon; 10/2015.
Joint work with F Ceccon, M Mistry
- S06 Misener R.** Stem Cell Bioprocessing under Uncertainty: A Case Study in Optimising Red Blood Cell Production. Centre for Computational Engineering Science, RWTH Aachen, DE; Invited by Prof A Mitsos; 02/2015.
Joint work with the Biological Systems Engineering Laboratory

- S05 Misener R.** Global Optimisation for Process Optimisation. Process Systems Enterprise; London, UK; Invited by Dr P Kleniati; 01/2015.
- S04 Misener R.** Relating MINLP Model Formulations to Algorithmic Solution Strategies. Department of Electronics, Computer Sciences & Systems, University of Bologna, IT; Invited by Prof A Lodi; 06/2014.
- S03 Misener R.** Mixed-Integer Nonlinear Optimization: Foundations and Applications. Department of Computing, Imperial, UK; *Job Talk*; 03/2014.
- S02 Misener R.** Making and Healing Blood: An Engineer's Approach. Department of Chemical Engineering, University of Surrey, UK; Invited by Prof K Kirkby; 01/2014.
Joint work with the Biological Systems Engineering Laboratory
- S01 Misener R.** Novel Global Optimization Methods: Theoretical & Computational Studies on Pooling Problems with Environmental Constraints. Centre for Process Systems Engineering, Imperial, UK; Invited by Prof E Pistikopoulos; 07/2011. *Joint work with CA Floudas*

INTERNATIONAL SCHOOLS

- Sc7 Misener R.** Transition-constrained Bayesian optimisation [1 hr lecture]. *Sargent Centre Summer School on Bayesian Optimisation*, Imperial, UK; Dr E A del Río Chanona; 09/2024.
- Sc6 Misener R.** Global Optimisation [3 hr lecture]. *Centre for Process Systems Engineering Advanced Optimisation Course*, Imperial, UK; Invited by Prof C Adjiman; 05/2017.
- Sc5 Misener R.** Mixed-Integer Nonlinear Optimisation [2 hr lecture \times 10 days]. *Visiting Professor, Vienna Graduate School On Computational Optimization*, Vienna, AT; Invited by Prof G Pflug; 05/2017.
- Sc4 Misener R.** Introduction to Global Optimisation [2 hr lecture]. *Centre for Process Systems Engineering Introduction to Optimisation Course*, Imperial, UK; Invited by Prof C Adjiman; 04/2017.
- Sc3 Misener R.** Introduction to Global Optimisation [2 hr lecture]. *Centre for Process Systems Engineering Introduction to Optimisation Course*, Imperial, UK; Invited by Prof C Adjiman; 05/2016.
- Sc2 Misener R.** Mixed-Integer Nonlinear Optimisation with Nonconvex Nonlinearities [3 hr lecture]. *MINO/ COST Spring School on Mixed Integer Nonlinear Programming and Applications*, Paris, FR; Invited by Dr C D'Ambrosio; 04/2016.
- Sc1 Misener R.** Global Optimisation [2 hr lecture]. *Centre for Process Systems Engineering Advanced Optimisation Course*, Imperial, UK; Invited by Prof C Adjiman; 04/2015.

INVITED CONFERENCE & WORKSHOP PRESENTATIONS [*PRESENTER]

- I54 Misener R.** Autonomous research machines: Self-optimizing new chemistry. *AIchemy Inaugural Annual Conference*; London, UK, 03/2025.
- I53 Misener R.** Autonomous research machines: Self-optimizing new chemistry. *Leverhulme Research Centre for Functional Materials Design Symposium*; Liverpool, UK, 11/2024.
- I52 Misener R.** Optimal decision-making with trained NN embedded. *Computational Optimization at Work*; Berlin, DE, 09/2024.
- I51 Misener R.** Optimizing over trained graph neural networks. *25th International Symposium on Mathematical Programming*; Montréal, CA, 07/2024.
- I50 Misener R.** Optimal decision-making with trained neural networks embedded. *London Operations Research Day*; London, UK, 04/2024.
- I49 Misener R.** OMLT: Optimization & Machine Learning Toolkit. *STOR-i Annual Conference*; Lancaster, UK, 01/2024.

- I48 Misener R.** OMLT: Optimization and Machine Learning Toolkit. *Applied Math Symposium at Bosch*; Renningen, DE; 10/2023.
- I47 Misener R.** Modeling for Optimisation over Trained Graph Neural Networks. *INFORMS Annual Meeting*; Phoenix, AZ, 10/2023.
- I46 Misener R.** Optimization for ML and ML for optimization. Overview talk at the *Institut Mittag-Leffler Workshop: Learning from Both Sides Linear and Nonlinear Mixed-Integer Optimization*; Djursholm, Sweden, 07/2023.
- I45 Misener R.** Partial least squares: Balancing accuracy with robustness. *Sargent Centre Symposium on Model-Based Design of Experiments*; London, UK, 06/2023.
- I44 Misener R.** Professor Floudas' continuing legacy: Automatically designing microreactor experiments. Invited talk at a special session in honor of Professor Floudas at the *33rd European Symposium on Computer-Aided Process Engineering*; Athens, Greece, 06/2023.
- I43 Misener R.** How I Learned to Stop Worrying and Love Parameters. *4th IMA and OR Society Conference on Mathematics of Operational Research*; Birmingham, UK, 04/2023.
- I42 Misener R.** Autonomous research machines: Self-optimizing new chemistry. *Isaac Newton Institute for Mathematical Sciences Workshop on Computational Challenges and Emerging Tools for Data-Driven Engineering*; Cambridge, UK, 04/2023.
- I41 Misener R.** Machine learning for mathematical optimization and mathematical optimization for machine learning. Tutorial talk at the *Dagstuhl Seminar on Data-Driven Combinatorial Optimization*; Dagstuhl, DE, 10/2022. *Joint work with the Computational Optimisation Group*
- I40 Misener R.** Autonomous research machines: Self-optimizing new chemistry. *ICML Workshop on Adaptive Experimental Design and Active Learning in the Real World*; Baltimore, MD, 07/2022. *Joint work with the Computational Optimisation Group*
- I39** Ceccon F., Jalving J., Haddad J., Thebelt A., Tsay C., Laird C. D., **Misener R.*** OMLT: Optimization & Machine Learning Toolkit. *32nd European Conference on Operational Research (EURO)*; Espoo, FI, 07/2022.
- I38** Ceccon F., Jalving J., Haddad J., Thebelt A., Tsay C., Laird C. D., **Misener R.*** OMLT: Optimization & Machine Learning Toolkit. *Workshop on Data & Dynamics*; Surrey, UK, 05/2022.
- I37** Folch J. P., Lee R. M., Shafei B., Walz D., Tsay C., van der Wilk M., **Misener R.*** Design of flow chemistry experiments using batch Bayesian optimization. *International Online Workshop on Continuous Particle Synthesis and Product Design*; 10/2021.
- I36** Tsay C.*, Kronqvist J., Thebelt A., **Misener R.** Partition-based formulations for mixed-integer optimization of trained ReLU neural networks. *INFORMS Annual Meeting*; Anaheim, USA, 10/2021.
- I35** Kronqvist J.*, Tsay C., **Misener R.** A Hierarchy of Relaxations between Big-M and Convex Hull Formulations. *INFORMS Annual Meeting*; Anaheim, USA, 10/2021.
- I34** Ceccon F., **Misener R.*** Solving the Pooling Problem at Scale with Extensible Quadratic Optimizer GALINI. *INFORMS Annual Meeting*; Anaheim, USA, 10/2021.
- I33** Thebelt A.*, Kronqvist J., Mistry M., Lee R. M., Sudermann-Merx N., **Misener R.** Uncertainty Measures and Hierarchical Acquisition Functions for Tree-based Black-Box Optimization. *INFORMS Annual Meeting*; Anaheim, USA, 10/2021.
- I32** Thebelt A.*, Kronqvist J., Mistry M., Lee R. M., Sudermann-Merx N., **Misener R.** ENTMOOT: A Framework for Optimization over Ensemble Tree Models. *International Conference on Operations Research (OR2021)*; Bern, CH, 09/2021.
- I31** Ceccon F., **Misener R.** GALINI: An Extensible MIQCQP Solver. *Virtual INFORMS Annual Meeting*. 11/2020. [Video link](#)

- I30** Thebelt A., Kronqvist J., Mistry M., Lee R. M., Sudermann-Merx N., **Misener R.** A Framework for Optimization Over Ensemble Tree Models. *Virtual INFORMS Annual Meeting*. 11/2020. [Video link](#)
- I29** Kronqvist J., **Misener R.** A Disjunctive Cut Strengthening Technique for MINLP. *Virtual INFORMS Annual Meeting*. 11/2020. [Video link](#)
- I28** Wiebe J., **Misener R.** A Robust Approach to Warped Gaussian Process-constrained Optimization. *Virtual INFORMS Annual Meeting*. 11/2020. [Video link](#)
- I27** Mistry M., Thebelt A., Letsios D., Kronqvist J. Lee R. M., Krennich G., **Misener R.** Mixed-Integer Convex Nonlinear Optimization with Gradient-Boosted Trees Embedded. *CRM/DIMACS Workshop on Mixed-Integer Nonlinear Programming*, Montréal, CA; Invited by Prof A Lodi; 10/2019.
- I26** Letsios D., Page N., Bradley J., **Misener R.** Bounded job start scheduling under uncertainty: Application to Royal Mail delivery scheduling. *The Operational Research Society Annual Conference (OR61)*. Kent, UK; 09/2019.
- I25** Letsios D., Kouyialis G., **Misener R.** Approximation algorithms for process systems engineering. *9th Foundations of Computer-Aided Process Design*; Copper Mountain, CO, USA; 07/2019.
- I24** Baltean-Lugojan R., Bonami P., **Misener R.**, Tramontani A. Selecting cutting planes for quadratic semidefinite outer-approximation via trained neural networks. *23rd Combinatorial Optimization Workshop*; CNRS Centre Paul Langevin, Aussois, FR; 01/2019.
- I23** **Misener R.** Stem Cell Biomanufacturing under Uncertainty: A Case Study in Optimizing Red Blood Cell Production, *AICHE Annual Meeting*. Presentation as a part of [AIChE's Futures Series](#). Pittsburgh, USA; 10/2018. *Joint work with the Biological Systems Engineering Laboratory*
- I22** Baltean-Lugojan R., **Misener R.***, Bonami P., Tramontani A. Online generation via offline selection of strong linear cuts from QP SDP relaxation. *Operations Research*, Brussels, BE; Invited by Dr T Berthold; 09/2018.
- I21** Ceccon F., **Misener R.** SUSPECT: MINLP Special Structure Detector for Python. *Optimization software, EURO*, Valencia, ES; Invited by Dr T Berthold; 07/2018.
- I20** Baltean-Lugojan R.*, **Misener R.**, Bonami P., Tramontani A. Online generation via offline selection: Low dimensional linear cuts from QP SDP relaxation. *International Symposium on Mathematical Programming*, Bordeaux, FR; Invited by Prof C Cartis; 07/2018.
- I19** Mistry M.*, Letsios D., **Misener R.**, Krennrch G., Lee R. M. Optimization with Gradient-Boosted Trees and Risk Control. *International Symposium on Mathematical Programming*, Bordeaux, FR; Invited by Prof H Mittelmann; 07/2018.
- I18** Letsios D.*, **Misener R.** On Exact Lexicographic Optimization Methods and Approximate Recovery Strategies in Two-Stage Robust Makespan Scheduling. *Computational Integer Programming, International Symposium on Mathematical Programming*, Bordeaux, FR; Invited by Prof D Salvagnin; 07/2018.
- I17** Letsios D.*, Kouyialis G., **Misener R.** Heuristics with Performance Guarantees for the Minimum Number of Matches in Heat Recovery Networks. *6th IMA Conference on Numerical Linear Algebra and Optimization*, Birmingham, UK; Invited by Prof C Cartis; 06/2018.
- I16** Kouyialis G., Letsios D., **Misener R.*** Heuristics with Performance Guarantees for the Minimum Number of Matches in Heat Recovery Networks. *Multiscale Systems Engineering I: In Honor of Prof C A Floudas, AIChE Annual Meeting*, Minneapolis, USA; Invited by Prof E N Pistikopoulos; 10/2017.
- I15** Baltean-Lugojan R., **Misener R.*** Piecewise Parametric Structure in the Pooling Problem – from Sparse Strongly-Polynomial Solutions to NP-Hardness. *Foundations of Computational Mathematics*, Barcelona, ES; Invited by Prof C Cartis & Prof E de Klerk; 07/2017.
- I14** Baltean-Lugojan R., **Misener R.*** Piecewise Parametric Structure in the Pooling Problem – from Sparse Strongly-Polynomial Solutions to NP-Hardness. *15th EUROPT Workshop on Advances in Continuous Optimization*, Montréal, CA; Invited by Prof M Anjos; 07/2017.

- I13** Baltean-Lugojan R., **Misener R.*** Globally Optimising Pooling Problems. *Chris Floudas Memorial Symposium*, Princeton, NJ; Invited by Prof F Boukouvala & Prof C Gounaris; 05/2017.
- I12** Mistry M., **Misener R.*** Integrating Mixed-Integer Optimization and Satisfiability Modulo Theories: Application to Planning and Scheduling. *Foundations of Computer Aided Process Operations*, Tucson, Arizona; Invited by Prof C Maravelias & Dr J Wassick; 01/2017.
- I11** Baltean-Lugojan R.*, **Misener R.** A Parametric Approach to the Pooling Problem. *5th International Conference on Continuous Optimization*, Tokyo, JP; 08/2016.
- I10** Ceccon F., **Misener R.*** Using Functional Programming to recognize Named Structure in an Optimization Problem: Application to Pooling. *5th International Conference on Continuous Optimization*, Tokyo, JP; Invited by Prof V Zavala; 08/2016.
- I09** Ceccon F., **Misener R.*** Using Functional Programming to recognize Named Structure in an Optimization Problem: Application to Pooling. *28th European Conference on Operational Research*, Poznan, PL; Invited by Dr T Berthold; 07/2016.
- I08** Baltean-Lugojan R., **Misener R.*** A Parametric Approach to the Pooling Problem. *Mixed Integer Programming Workshop*, Miami, USA; 05/2016.
- I07** Ceccon F., **Misener R.***. Detecting Pooling Network Structure. *Short Research Announcement at the Oberwolfach MINLP Workshop*, Oberwolfach, DE; 10/2015.
- I06** **Misener R.***, Mistry M. Solving MINLP with Heat Exchangers: Special Structure Detection and Large-Scale Global Optimisation. *22nd International Symposium on Mathematical Programming*, Pittsburgh, PA; Invited by Prof C Floudas; 07/2015.
- I05** **Misener R.*** Deterministic Global Optimisation for Process Optimisation. *Centre for Process Systems Engineering Industrial Consortium Meeting*, Imperial, UK; Invited by Prof N Shah; 12/2014.
- I04** **Misener R.***, Floudas C. A. Special Mathematical Structure Detection and Exploitation with ANTI-GONE. *Global Optimisation Workshop*, London, UK; Invited by Dr P Parpas; 12/2013.
- I03** **Misener R.*** Architecting ANTIGONE: Design Choices and Tradeoffs. *MODAL Workshop on MINLP Solver Technology*, Zuse-Institut Berlin, DE; Invited by Mr A Gleixner; 11/2013.
- I02** **Misener R.***, Floudas C. A. Globally Optimising Process Networks with ANTIGONE: Automatic Recognition and Adaptation Strategies. *COST Workshop on Mixed Integer Nonlinear Programming*, Paris, FR; Invited by Prof L Liberti; 10/2013.
- I01** **Misener R.***, Floudas C. A. ANTIGONE: A general mixed-integer nonlinear global optimisation framework. *4th International Conference on Continuous Optimization*, Lisbon, Portugal; Invited by Prof A Mitsos; 07/2013.

CONTRIBUTED CONFERENCE & WORKSHOP PRESENTATIONS [*PRESENTER]

- P61** Odgers J., Kappatou C. D., **Misener R.**, Garcá-Muñoz S., Filippi S. Uncertainty Propagation for Probabilistic Prediction in Partial Least Squares Using Bootstrap Methods. *AIChE Annual Meeting*; 11/2022.
- P60** Kappatou C. D., Odgers J., García-Muñoz S., **Misener R.** Optimization-Based Approaches for Explainable, Automated Chemometric Models. *AIChE Annual Meeting*; 11/2022.
- P59** Kappatou C. D., Odgers J., García-Muñoz S., **Misener, R.** Optimization Methods for Exploring Accuracy Versus Robustness of a Regression Prediction in Process Analytical Technology. *AIChE Annual Meeting*, 11/2022.
- P58** Kappatou, C. D., García-Muñoz, S., Odgers, J., **Misener, R.** Towards Automation and Robustification of Chemometric Models, 22nd IFPAC Annual Meeting, North Bethesda, USA, 06/2022.

- P57** Folch J. P., Tsay C., van der Wilk M., Shafei B., Walz D., Niederle A., **Misener R.** Design of flow chemistry experiments using batch Bayesian optimization. *AIChE Annual Meeting*, Boston, USA; 11/2021.
- P56** Tsay C., Kronqvist J., Thebelt A., **Misener R.** Training and Reformulating Neural Network Surrogate Models for Optimization. *AIChE Annual Meeting*, Boston, USA; 11/2021.
- P55** Tsay C., Ceccon F., **Misener R.** Formulations and Restrictions for the Pooling and Multiperiod Pooling Problems. *AIChE Annual Meeting*, Boston, USA; 11/2021.
- P54** Wiebe J., **Misener R.** ROModel: Modelling Robust Optimization Problems in Pyomo. *AIChE Annual Meeting*, Boston, USA; 11/2021.
- P53** Kronqvist J., **Misener R.**, Tsay C. Between steps: Intermediate relaxations between big-M and convex hull formulations. *International Conference on Integration of Constraint Programming, Artificial Intelligence, and Operations Research (CPAIOR)*, 2021. **Distinguished Paper Award**, [Video link](#)
- P52** Wiebe J.*, **Misener R.** ROModel: A Python Robust Optimization Modeling Toolbox. *31st European Symposium on Computer Aided Process Engineering*, Istanbul, TR, 06/2021. [Video link](#)
- P51** Sedgwick R.*, Goertz J., **Misener R.**, Stevens M., van der Wilk M. [Design of Experiments for Verifying Biomolecular Networks](#). *Machine Learning for Molecules NeurIPS Workshop*. 12/2020. [Video link](#)
- P50** Wiebe J., Dunlop J., Cecilio I., **Misener R.** A Robust Approach to Warped Gaussian Process-Constrained Optimization. *Virtual AIChE Annual Meeting*; 11/2020. [Video link](#)
- P49** Olofsson S.*, **Misener R.** Design of Dynamic Experiments for Model Discrimination Under Uncertainty Using Gaussian Process Surrogate Models. *AIChE Annual Meeting*, Orlando, USA; 11/2019.
- P48** Wiebe J.*, Cecilio I., **Misener R.** The robust pooling problem. *29th European Symposium on Computer Aided Process Engineering*, Eindhoven, NL, 06/2019.
- P47** Cyrus K.*, Letsios D., **Misener R.**, Toni F. Argumentation for Explainable Scheduling. *33rd AAAI Conference on Artificial Intelligence (AAAI-19)*, Hawaii, HI, 01/2019.
- P46** Wiebe J.*, Cecilio, I., **Misener R.** Robust Planning and Scheduling for Processes with Equipment Degradation. *AIChE Annual Meeting*, Pittsburgh, USA; 10/2018.
- P45** Baltean-Lugojan R., Bonami P., Tramontani A., **Misener R.*** Online Generation Via Offline Selection of Strong Linear Cuts from a Semidefinite Programming Relaxation. *AIChE Annual Meeting*, Pittsburgh, USA; 10/2018.
- P44** Wiebe J.*, Cecilio I., **Misener R.** Data-driven optimization of processes with degrading equipment, *3rd PSE@ResearchDayUK*, Imperial, UK, 09/2018.
- JW awarded 2nd Presentation Prize (13 entries)**
- P43** Olofsson S.*, Deisenroth M. P., **Misener R.** Design of Experiments for Model Discrimination Hybridising Analytical and Data-Driven Approaches. *International Conference on Machine Learning (ICML)*, Stockholm, SE; 07/2018. *Long 20 minute presentation*
- P42** Olofsson S.*, Deisenroth M. P., **Misener R.** Optimal Design of Experiments for Model Discrimination using Gaussian Process Surrogate Models. *13th International Symposium on Process Systems Engineering*, San Diego, USA; 07/2018.
- P41** Wesselhoeft C., Ham D., **Misener R.*** Algorithms for Mixed-Integer Optimization Constrained by Partial Differential Equations. *13th International Symposium on Process Systems Engineering*, San Diego, USA; 07/2018.
- P40** Mistry M., **Misener R.*** Integrating Mixed-Integer Optimisation and Satisfiability Modulo Theories. *AIChE Annual Meeting*, Minneapolis, USA; 10/2017.

- P39** Olofsson S.*, Mehrian M., Geris L., Calandra R., Deisenroth M. P., **Misener R.** Bayesian Multi-Objective Optimisation of Neotissue Growth in a Perfusion Bioreactor Set-Up. *27th European Symposium on Computer Aided Process Engineering*, Barcelona, ES, 06/2017.
- P38** Kouyialis G., Letsios D.*, **Misener R.** Heuristics with Performance Guarantees for the Minimum Number of Matches in Heat Recovery Networks. *Department of Computing Research Associate Symposium*, London, UK; 06/2017.
- DL awarded 2nd Prize, Top Symposium Presenter (10 entries)**
- P37** Baltean-Lugojan R.*, **Misener R.** Piecewise Parametric Structure in the Pooling Problem – from Sparse Strongly-Polynomial Solutions to NP-Hardness. *Computational Management Science*, Bergamo, IT; 05/2017.
- P36** Olofsson S.*, Mehrian M., Geris L., Calandra R., Deisenroth M. P., **Misener R.** Bayesian Multi-Objective Optimisation of Neotissue Growth in a Perfusion Bioreactor Set-Up. *5th Belgian Symposium on Tissue Engineering*, Leuven, BE; 05/2017.
- P35** Baltean-Lugojan R.*, **Misener R.** Piecewise Parametric Structure in the Pooling Problem – from Sparse Strongly-Polynomial Solutions to NP-Hardness. *Mathematical Optimization in the Decision Support Systems for Efficient and Robust Energy Networks Final Conference*, Modena, IT; 03/2017.
- P34** Baltean-Lugojan R., **Misener R.** Deterministic Global Optimization of Large-Scale Pooling Problems Via Topological Branch-and-Bound. *AIChE Annual Meeting*, San Francisco, CA; 11/2016.
- P33** Ceccon F., **Misener R.*** Using Functional Programming to Recognize Named Structure in an Optimization Problem: Application to Pooling. *AIChE Annual Meeting*, San Francisco, CA; 11/2016.
- P32** Kouyialis G.*, **Misener R.** Detecting symmetry in designing heat exchanger networks. *1st PSE@ResearchDayUK*, Imperial, UK, 07/2016.
- P31** Ulmasov D.*, Baroukh C., Chachuat B., Deisenroth M. P., **Misener R.** Bayesian Optimisation with Dimension Scheduling Algorithm: Application to Biological Systems. *26th European Symposium on Computer Aided Process Engineering*, Portorož, SI, 06/2016.
- P30** Mistry M.*, **Misener R.** Solving MINLP with Heat Exchangers: Special Structure Detection and Large-Scale Global Optimisation. *AIChE Annual Meeting*. Salt Lake City, UT, 11/2015.
- P29** Allenby M. C.*, Tahlawi A., Brito Dos Santos S., **Misener R.**, Hwang Y., Panoskaltsis N., Mantalaris A. Development of a hematopoietic microenvironment for the production of red blood cells (RBCs) in a novel 3D hollow fibre bioreactor. *TERMIS*. Boston, MA, 09/2015.
- P28** Fuentes-Garí M.*, **Misener R.**, Georgiadis M. C., Kostoglou M., Pistikopoulos E. N., Panoskaltsis N., Mantalaris A. Chemotherapy Optimization in Leukemia: Selecting the Right Mathematical Models for the Right Biological Processes. *9th IFAC Symposium on Biological & Medical Systems*. Berlin, DE; 09/2015
- P27** **Misener R.**, Mistry M.* Solving MINLP with Heat Exchangers: Special Structure Detection and Large-Scale Global Optimisation. *13th EUROPT Workshop on Advances in Continuous Optimisation*, Edinburgh, UK; 07/2015.
- P26** **Misener R.***, Fuentes-Garí M., Allenby M. C., Panoskaltsis N., Pistikopoulos E. N., Mantalaris A. Stem Cell Bioprocessing under Uncertainty: A Case Study in Optimising Red Blood Cell Production. *17th British-French-German Conference on Optimization*. London, UK; 06/2015.
- P25** Savvopoulos S. V.*, **Misener R.**, Panoskaltsis N., Pistikopoulos E. N., Mantalaris A. Global Sensitivity Analysis for a Dynamic Model of Chronic Lymphocytic Leukemia Disease Trajectories. *12th International Symposium on Process Systems Engineering*. Copenhagen, DK; 06/2015.
- P24** **Misener R.***, Fuentes-Garí M., Velliou E., Panoskaltsis N., Pistikopoulos E. N., Mantalaris A. Robust Design and Operation of Red Blood Cell Production in a Parallelised Hollow Fibre Bioreactor. *AIChE Annual Meeting*. Atlanta, GA; 11/2014.

- P23** Velliou E., Brito Dos Santos S., Fuentes-Garí M.*, **Misener R.**, Panoskaltzis N., Pistikopoulos E. N., Mantalaris A. Towards *in vitro* Optimization of Chemotherapy for Leukaemia Under Environmental Stress: Moving from 2- to 3-Dimensional Cultures. *AIChE Annual Meeting*. Atlanta, GA; 11/2014.
- P22** Fuentes-Garí M.*, **Misener R.**, García-Münzer D., Velliou E., Georgiadis M. C., Kostoglou M., Panoskaltzis N., Pistikopoulos E. N., Mantalaris A. Towards Personalized Treatments for Leukemia Based on Cell Cycle Heterogeneity: An Experimental/Modeling Approach. *AIChE Annual Meeting*. Atlanta, GA; 11/2014.
- P21** **Misener R.***, Fuentes-Garí M., Velliou E., Panoskaltzis N., Pistikopoulos E. N., Mantalaris A. Robust Design and Operation of Red Blood Cell Production in a Parallelised Hollow Fibre Bioreactor. *INFORMS Annual Meeting*. San Francisco, CA; 11/2014.
- P20** Velliou E., Fuentes-Garí M., **Misener R.***, Pefani E., Rende M., Panoskaltzis N., Pistikopoulos E. N., Mantalaris A. A framework for the design, modeling and optimization of biomedical systems. *Foundations of Computer-Aided Process Design*. Cle Elum, WA; 07/2014.
- P19** **Misener R.***, Chin J., Lai M., Fuentes-Garí M., Velliou E., Panoskaltzis N., Pistikopoulos E. N., Mantalaris A. Robust Superstructure Optimisation of a Bioreactor that Produces Red Blood Cells. *24th European Symposium on Computer Aided Process Engineering*. Budapest, Hungary; 06/2014.
- P18** **Misener R.***, Floudas C. A. ANTIGONE: Algorithms for coNTinuous / Integer Global Optimization of Nonlinear Equations. *AIChE Annual Meeting*, San Francisco, CA; 11/2013.
- P17** Fuentes-Garí M.*, Velliou E., **Misener R.**, Britos dos Santos S., Panoskaltzis N., Mantalaris A., Pistikopoulos E. N. Towards a Personalised Treatment of Acute Myeloid Leukaemia: The Impact of Considering the Cell Cycle. *AIChE Annual Meeting*, San Francisco, CA; 11/2013.
- P16** Li J.*, Xiao X., **Misener R.**, Floudas C. A. Effective Global Optimization Methods for Total Refinery Planning Operations. *AIChE Annual Meeting*, San Francisco, CA; 11/2013.
- P15** Floudas C. A., **Misener R.*** Globally Optimizing Mixed-Integer Quadratically-Constrained Quadratic Programs: Advances in GloMIQO. *AIChE Annual Meeting*, Pittsburgh, PA; 10/2012.
- P14** Floudas C. A.*, **Misener R.** Globally Optimizing Mixed-Integer Signomial Programs. *AIChE Annual Meeting*, Pittsburgh, PA; 10/2012.
- P13** Floudas C. A.*, **Misener R.** A Global Optimization Framework for Mixed-Integer Signomial Programs. *INFORMS Annual Meeting*, Phoenix, AZ; 10/2012.
- P12** Floudas C. A.*, **Misener R.** Globally Optimizing Mixed-Integer Quadratically-Constrained Quadratic Programs (MIQCQP). *21st International Symposium on Mathematical Programming*, Berlin, DE; 08/2012.
- P11** Floudas C. A.*, **Misener R.** GloMIQO: Global Mixed-Integer Quadratic Optimizer. *European Conference on Operational Research*, Vilnius, Lithuania; 07/2012.
- P10** Floudas C. A.*, **Misener R.** A Framework for Solving Mixed-Integer Quadratically-Constrained Quadratic Programs (MIQCQP). *INFORMS International*, Beijing, China; 06/2012.
- P09** **Misener R.***, Floudas C. A. Global Optimization of Mixed-Integer Quadratically-Constrained Quadratic Programs (QCQP) Through Piecewise-Linear and Edge-Concave Relaxations. *AIChE Annual Meeting*, Minneapolis, MN; 10/2011.
- P08** Baliban R.*, Elia J. A., **Misener R.**, Floudas C. A. Global Optimization of Thermochemical-Based Coal, Biomass, and Natural Gas to Liquids Processes Via Logarithmic Partitioning Schemes. *AIChE Annual Meeting*, Minneapolis, MN; 10/2011.
- P07** Li J.*, **Misener R.**, Floudas C. A. Scheduling of Crude Oil Operations Under Uncertainty: A Robust Optimization Framework Coupled with Global Optimization. *AIChE Annual Meeting*, Minneapolis, MN; 10/2011.

- P06 Misener R.***, Thompson J. P., Floudas C. A. Large-Scale Global Optimization of Generalized and Extended Pooling Problems: Methods and Computational Tools. *AIChE Annual Meeting*, Salt Lake City, UT; 2010.
- P05 Misener R.***, Floudas C. A. Globally Optimal Nesting of Irregular Shapes into a Limited Resource. *AIChE Annual Meeting*, Salt Lake City, UT; 11/2010.
- P04 Li J.***, **Misener R.**, Floudas C. A. A New Modeling and Global Optimization Approach for Scheduling of Crude Oil Operations. *AIChE Annual Meeting*, Salt Lake City, UT; 11/2010.
- P03 Misener R.***, Thompson J. P., Floudas C. A. Algorithms and Computational Tools for Globally Optimizing Large-Scale Pooling Problems. *Graduate Student Symposium*, Princeton, NJ; 10/2010.
- P02 Misener R.***, Floudas C. A. Global Optimization of Large-Scale Extended Pooling Problems with the EPA Complex Emissions Model. *AIChE Annual Meeting*, Nashville, TN; 11/2009.
- P01 Misener R.***, Gounaris C. E., Floudas C. A. Computational Comparison of Piecewise Linearization Schemes in Gas Lifting and Pooling Operations. *AIChE Annual Meeting*, Philadelphia, PA; 11/2008.

TEACHING

Operations Research

Course Leader Joint with Dr G Casale (2016-19) and Dr D Paccagnan (2021-). Nominated for **2017 Best Teaching for Undergraduates** and finalist for **2018 Best Teaching for Postgraduates**.

Imperial
2016-19, 2021 –

Computing for Optimal Decisions

Course Leader Joint with Dr P Parpas. Finalist for **2016 Best Innovation in Teaching**, Imperial Student Academic Choice Award. The teaching innovation recognition is due to how frequently I discuss research in the classroom.

Imperial

2014 –

Advanced Optimisation Short Course

Lecturer Lead the *Global Optimisation* module of the Centre for Process Systems Engineering Short Course for Industry Professionals.

Imperial

2015, 2016

Beginning Algebra

Volunteer Instructor Team teach Mercer County Community College MAT 033 (Summer 2011; Spring 2012) & MAT 037 (Fall 2010; Spring 2011; Fall 2011) for the Princeton Prison Teaching Initiative. Activities: lecturing, developing worksheets, supervising tutorials, grading.

Albert C. Wagner Youth Correctional Facility

2010-12

Design, Synthesis, & Optimization of Chemical Processes

Assistant in Instruction Assisted students in modelling the conversion biomass & coal to gasoline for the capstone undergraduate Chemical Engineering process design course. Led tutorials covering Aspen & GAMS software. Received **Excellence in Teaching Award** from the School of Engineering & Applied Sciences.

Princeton

Fall 2009

Chemical & Biological Engineering Laboratory

Teaching Assistant Advised a team of students in modelling a biological reactor using computational fluid dynamics with the software package FLUENT.

MIT

Spring 2007

Introduction to Chemical Engineering

Grader Reviewed student problem sets.

MIT

Fall 2004 & 2005

RESEARCH MENTORING FOR RESEARCH FELLOWS

In the UK, *Research Fellow* is intermediate between *Postdoctoral Associate* and *Lecturer* (Assist Prof). I collaborate with research fellows and assist in developing their independent research careers.

COMPLETED

Dr Jan Kronqvist

Funding Royal Society Newton International Fellowship, Swedish Cultural Foundation in Finland

Awarded Distinguished Paper Award at CPAIOR 2021, Selected to present in Parliament as part of

2019-21

the 2021 STEM for Britain competition ([Video link](#))
Now Associate Professor, KTH Royal Institute of Technology

Dr Calvin Tsay 2020-22
Funding EPSRC David Clarke Postdoctoral Fellowship, Imperial College Research Fellowship
Awarded Distinguished Paper Award at CPAIOR 2021, 2022 COIN-OR Cup for OMLT
Now Associate Professor, Imperial

RESEARCH MENTORING FOR POSTDOCTORAL ASSOCIATES

CURRENT

Dr Kateryna Morozovska 2025-
Funded by the EPSRC / BASF Prosperity Partnership IConIC

Mr Marco Sandrin 2025-
Funded by the EPSRC Prosperity Partnership IConIC with SOLVE

Dr Juan Campos Salazar 2018-20,22-
Contributed to the GALINI EPSRC project, now contributing to ADOPT EPSRC.

COMPLETED

Dr Richard Oberdieck 2015-16
Contributed to the U Ψ^2 EPSRC project. Primary supervisor was Prof E Pistikopoulos.
Now Lead Data Scientist, Banking Circle.

Dr Dimitrios Letsios 2016-19
Contributed to the U Ψ^2 EPSRC project.
Awarded 2nd Presentation Prize at the 2017 Department of Computing Research Associate Symposium,
Best (Innovative) Demo at AAMAS 2020
Now Lecturer (Assistant Professor) in the Department of Informatics, Kings College London.

Dr Kristijonas Cyras 2017-20
Contributed to the ROAD2H EPSRC project. Primary supervisor was Prof F Toni. I contributed to the optimisation side of Dr Cyras' work.
Awarded Best (Innovative) Demo at AAMAS 2020
Now AI Researcher, Ericsson.

Dr Miten Mistry 2020
Contributed to the ROAD2H EPSRC project.
Now minimax labs

Dr Francesco Ceccon 2021
Contributed to the GALINI EPSRC project.
Awarded 2022 COIN-OR Cup for OMLT
Now Co-Founder, Auclantis

Dr Chrysoula Kappatou 2020-23
Contributed to the Eli Lilly / EPSRC partnership.
Selected to the 2021 MIT Rising Stars in Chemical Engineering programme
Now Data Scientist, BASF

Dr Ruby Sedgwick 2023-25
Funded by the Wellcome Trust.
Now Research Scientist, Xyme

Dr Jixiang Qing 2023-25
Funded by the EPSRC / BASF Prosperity Partnership
Now Lecturer (Assistant Professor), Lancaster University

RESEARCH MENTORING FOR PHD CANDIDATES

CURRENT

Toby Boyne 2023-
Funded by BASF & the EPSRC CDT StatML.

COMPLETED

Dr Georgia Kouyialis 2014-18
Exploiting Symmetry in Mixed-Integer Nonlinear Optimisation. Funded by EPSRC Doctoral Training Account Studentship.

Awarded 3rd prize for 1st year PhD students in the 2015 Departmental Google Poster Competition, FOCAPO/CPC 2017 Travel Award, 1st Poster Prize at the 2017 PSE@ResearchDayUK, 2nd Poster Prize at the 2017 CPSE Annual Meeting, 1st Poster Prize at the UK/Ireland Annual SIAM Meeting.
Now Data Science Consultant at Dataiku.

Dr Radu Baltean-Lugojan 2015-19
Exploiting Structure in Nonconvex Quadratic Optimisation. Funded by EPSRC Doctoral Training Account Studentship.

Awarded 2nd prize for 1st year PhD students in the 2016 Departmental Google Poster Competition, 2017-18 IBM PhD Fellowship
Now Portfolio Manager at Eisler Capital.

Dr Simon Olofsson 2016-20
Gaussian Processes for Hybridisation of Analytical and Data-Driven Approaches for Design of Experiments. Funded by ModLife (EU H2020 675251).

Awarded Best Quality Poster for 2nd year PhD students in the 2018 Departmental Google Poster Competition. Selected to present in Parliament as part of the 2019 STEM for Britain competition.
Now Software Engineer at Meta.

Dr Miten Mistry 2015-20
Branching strategies for mixed-integer programs containing logical constraints and decomposable structure. Funded by HiPEDs EPSRC Centre for Doctoral Training.

Awarded 2015 Donald Davies Memorial Prize for MEng thesis excellence. Selected to present in Parliament as part of the 2019 STEM for Britain competition.
Now minimax labs.

Dr Francesco Ceccon 2016-21
Funded by the EPSRC.
Now Co-Founder, Apibara.

Dr Johannes Wiebe 2017-21
Funded by Schlumberger & HiPEDs EPSRC Centre for Doctoral Training.
Awarded 2nd Presentation Prize at the 2018 PSE@ResearchDayUK, 3rd Poster Prize at the 2019 CPSE Annual Meeting.
Now Flexciton

Dr Alexander Thebelt 2019-23
Funded by BASF.
Awarded 1st Poster Prize at the 2019 CPSE Annual Meeting, 2022 COIN-OR Cup for OMLT.
Now Machine Learning Engineer, QuantCo

Dr Ruby Sedgwick 2019-23
Funded by EPSRC CDT AI4Health. Co-supervisor with Prof M Stevens (Department of Materials).
Awarded 3rd Poster Prize BioMedEng22.
Now Research Scientist, Xyme

Dr Jose Folch 2020-24

Funded by BASF & the EPSRC CDT StatML. Co-supervised with Dr Mark van der Wilk.
Awarded 2023 Best Paper, Computers & Chemical Engineering
Now Chief Scientific Officer and Co-Founder, SOLVE

Dr James Odgers 2020-25

Funded by the Eli Lilly / EPSRC partnership. Co-supervised with Dr Sarah Filippi (Department of Mathematics).

Now Postdoc, Helmholtz Munich

Shiqiang Zhang 2021-

Funded by an Hans Rausing Scholarship.

Awarded Selected to present in Parliament as part of the 2025 STEM for Britain competition.

Now Data Scientist, ByteDance

IMPERIAL DEPARTMENT OF CHEMICAL ENGINEERING

Dr María Fuentes-Garí 2012-15

Population Balance Model of the Leukaemia Cell Cycle for Optimising Chemotherapy Treatments; Supervisors: Prof A Mantalaris and Prof E Pistikopoulos, we collaborated on cell cycle modelling.

Now Senior Consultant at Process Systems Enterprise.

Dr Symeon Savvopoulos 2013-18

Mathematical Modelling of Chronic Lymphocytic Leukaemia; Supervisors: Prof A Mantalaris and Prof E Pistikopoulos, our collaboration was on Modelling Disease Trajectories for CLL.

Now Postdoctoral associate, Khalifa University.

RESEARCH MENTORING FOR MASTERS & UG PROJECT STUDENTS

Miten Mistry MEng, 2014-15

Thesis published in *Computers & Chemical Engineering* (J25).

MM awarded 2015 Donald Davies Memorial Prize for MEng thesis excellence

Balarabe Ogbeha BEng, 2014-15

Francesco Ceccon MSc, 2015

Thesis published in *AICHE Journal* (J26).

Jiaying Li MSc, 2015

Doniyor Ulmasov Joint with Dr M P Deisenroth. MSc, 2015

Collaboration with Dr B Chachuat and Dr C Baroukh. Thesis published at *ESCAPE* (E17).

Chia (Joel) Choo Joint with Dr L Nardi and Prof P Kelly. MRes Project, 2015

Melinda Chan MSc, 2016

Karlson Lee Joint with Dr A Faisal. MSc, 2016

Pierre Thary MSc, 2016

Chase Hellemans MEng, 2016-17

Jakub Grzegorek MEng, 2016-17

Pingchuan Ma MSc Independent Study Option, 2017

Christian Wesselhoeft MSc Independent Study Option & MSc thesis, 2017

Joint with Dr D Ham. Thesis published at *PSE* (E22).

CW awarded 2017 Winton Capital Applied Computing MSc Project Prize

Anna Collins Joint with Prof F Toni. Undergraduate Research Opportunities Programme, 2017, 2018

Julius Hense Undergraduate project, 2017-18

Natasha Page MSc, 2018

Thesis published at *COCOA* (C03) & in the *Journal of Scheduling* (J45).

NP awarded Runner up, 2019 May Hicks Award from the Operational Research Society

Michael Radigan MEng, 2017-18

Sarah Wang	MSc, 2018
Shudian Zhao	MSc, 2018
Chun (Nick) Li	BEng, 2018-19
Kunlong Chen	MSc Independent Study Option, 2019
Suraj G	MEng, 2018-19
Thesis published in the <i>Journal of Scheduling</i> (J45).	
SG awarded 2019 NewVoice Media Prize for Computing MEng thesis excellence	
Chun Li	BEng, 2018-19
Abigail Annkah	MSc, African Institute for Mathematical Sciences, 2019
Cornelius Braun	MSc, 2022
Jiaqi Zhao	MSc, 2022
Venus Cheung	MSc, 2022
Adi Prasad	Undergraduate Research Opportunities Programme, 2022
Clara Stoddart	MEng, 2022-23
Lauren Shrack	MIT International Research Opportunities Programme, 2023
Stefan Savulescu	MEng, 2023-24
Antoine Calame	MSc, 2024
Omar Alkhatib	MEng, 2024-25

PRIOR ASSISTANCE IN MENTORING

Final-Year Undergraduate Research Project Supervision

Imperial: Karan Gupta, Clara Hedegaard, Eleanor Shead, Thomas Wiggins; joint with Prof A Mantalaris. Thesis of KG & TW published in *AICHE Journal* (J32), 2013. *Princeton*: Philip Miller; joint with Prof C A Floudas, 2011-2012

Habib Adebisi Abubakar Joint with Prof C Adjiman.	MSc, 2013-14
Nikolaos Stefanopoulos Joint with Prof A Mantalaris and Prof E Pistikopoulos.	MSc, 2013-14

FINANCIAL SUPPORT SECURED

FELLOWSHIPS

BASF/Royal Academy of Engineering Research Chair	2022 - 2027
Title: <i>Data-Driven Optimisation</i> ; £216k (PI)	
Engineering & Physical Sciences Research Council Early Career Fellowship	2017 - 2022
Title: <i>GALINI: Global Algorithms for mixed-Integer Nonlinear optimisation of Industrial systems</i>	
Software development for novel engineering research; Includes 6 years postdoc funding; £984k (PI)	
Royal Academy of Engineering Research Fellowship	2012 - 2017
Support for engineers to develop an academic research career; £539k (PI)	
Imperial College Junior Research Fellowship	2012 - 2015
Sustain early career researchers (declined); £114k (PI)	
USA National Science Foundation Graduate Research Fellowship	2007 - 2012
Support for graduate students in STEM; \$120k (PI)	
Princeton University Gordon Y. S. Wu Fellowship ; \$12k	2007 - 2009

FELLOWSHIPS TO MY TEAM MEMBERS

EPSRC David Clarke Postdoctoral Research Fellowship	2020 - 2023
Fellow Dr C Tsay developed his independent research and collaborated with my team; £351k	
Imperial College Research Fellowship	2020 - 2024
Fellow Dr C Tsay developed his independent research and collaborated with my team; £195k	
Newton International Fellowship from the Royal Society	2019 - 2021

Fellow Dr J Kronqvist developed his independent research and collaborated with my team; £99k
Prognosis for Fault Diagnosis 2017 - 2021
 EPSRC Industrial CASE Studentship from Schlumberger to PhD student J Wiebe; £27.5k
Cutting Planes for Global Optimisation 2017 - 2018
 IBM Fellowship to PhD student R Baltean-Lugojan; £25k

GRANTS

Computer-aided molecular design with data-driven models 2024 - 2025
 BASF. 1 year funding for a PhD student; £42k (PI)

Space optimization for NHM Unlocked 2024
 Natural History Museum. 6 months postdoctoral funding (PI).

Collaborative Computational Modelling at the Interface (CCMI) 2024 - 2033
 EPSRC Centre for Doctoral Training led by Prof T Betcke (UCL) and Prof C Cotter (Imperial). RM is one of 8 co-directors and one of 2 Directors of Research (co-I).

AlChem: AI for Chemistry Hub 2024 - 2029
 EPSRC AI Hub led by Prof K Jelfs (Imperial) and Prof A Cooper (Liverpool). RM is one of six co-directors; £12M (coI)

Innovative Continuous Manufacturing for Industrial Chemicals (IConIC) 2023 - 2028
 EPSRC Prosperity Partnership with BASF. Professor M Hii from Imperial Chemistry is PI. To RM: 6 years of postdoctoral funding; £6.865M (coI)

Data-driven optimization of hierarchical systems 2023 - 2026
 BASF. 1 PhD studentship (part-funded with the StatML CDT); £115k (PI)

Surveillance Suite for Targeting Interventions to Cholera Outbreaks 2023 - 2026
 Wellcome Trust. Prof M Stevens from Imperial Materials is PI. To RM: 18 months postdoctoral funding; £2.683M (coI)

ADOPT: Advancing optimisation technologies 2022 - 2026
 EPSRC. Prof B Chachuat from Imperial Chemical Engineering is PI. To RM: 24 months postdoctoral funding; £1.318M (coI)

Time-Indexed, Batch Bayesian Optimization for Flow Chemistry 2020 - 2024
 BASF. 1 PhD studentship (part-funded with the StatML CDT); £104k (PI)

Transforming synthetic drug manufacturing: novel processes, methods & tools 2019 - 2027
 EPSRC Prosperity Partnership with Eli Lilly. Prof C Adjiman from Imperial Chemical Engineering is PI. To RM: 3 years postdoctoral funding, 4 years PhD funding; £4.182M (coI)

Modern Statistics and Statistical Machine Learning at Imperial & Oxford 2019 - 2027
 EPSRC Centre for Doctoral Training. Prof A Gandy from Imperial Maths is PI. I am the Department of Computing coI and an *Industry Liaison*; £6.159M (coI)

Global optimisation with ensemble machine learning models 2019 - 2022
 BASF. 1 PhD studentship; £270k (PI)

Digital Media Data Analytics 2018 - 2019
 Innovate UK (TS/R018537/1). Investigators: Dr A Field (PI), Dr M P Deisenroth, Dr R Misener (coI). To DoC: 1 year postdoctoral funding; £117k (coI)

BASF Research Project 2017
 BASF. To RM: 4.2 months PhD funding; £40k (PI)

ROAD2H: Resource Optimisation, Argumentation, Decision Support & Knowledge Transfer to Create Value via Learning Health Systems 2017 - 2020
 EPSRC EP/P029558/1. Investigators: Prof A Darzi (PI), Dr K Chalkidou, Dr V Curcin, Prof B Delaney, Dr R Li, Dr J Marti, Dr B Marovic, Dr R Misener (coI), Mr J Symons, Prof F Toni (Computing PI). To FT & RM: 3 years postdoctoral funding; £1.516M (coI)

Parallelising Mixed-Integer Optimisation: Energy Efficiency Applications 2017 - 2018
 EPSRC First Grant Scheme. To RM: 1 year Research Associate Funding, 3 hours per week; £101k (PI)

ModLife	2015 - 2019
EU H2020 675251. Investigators: Prof A Mantalaris (PI), Dr R Misener (coI), European Commission (H2020-MSCA-ITN-2015); To RM: 3 years PhD funding & 5 hours per week; £507k (coI)	
SyMBioSys: Systematic Models for Biological Systems Engineering	2015 - 2019
EU H2020 675585. Investigators: Prof A Mantalaris (PI), Dr R Misener (coI), Dr N Panoskaltis, European Commission (H2020-MSCA-ITN-2015); To RM: 5 hours per week; £507k (coI).	
UΨ^2: Uncertainty-Aware Planning and Scheduling in the Process Industries	2015 - 2019
EPSRC EP/M028240/1. Investigators: Dr V Dua, Dr R Misener (coI), Prof L Papageorgiou (PI), Dr P Pappas (Imperial PI), Dr E Pistikopoulos, Dr W Wiesemann, EPSRC; To RM: 3.5 years RA funding & 3.8 hours per week; £765k (coI)	

INTERNAL FUNDING

UKRI Impact Acceleration Funding, £71.7k (PI)	2022
Data Science Institute Seed Funding in Probabilistic Modelling, £20k (PI)	2018

THESIS COMMITTEES

HABILITATION À DIRIGER DES RECHERCHES (2 EXTERNAL) _____

Dr Amélie Lambert	École doctorale Sciences des Métiers de l'Ingénieur	11/2021
<i>Exact solutions of polynomial programs through quadratic convex reformulations</i>		
Dr Claudia D'Ambrosio	Université Paris 13	07/2018
<i>Solving well-structured MINLP problems</i>		

PHD (7 EXTERNAL, 8 INTERNAL) _____

Dr Miriam Sarkis	Imperial	10/2024
<i>Uncertainty-aware decision-support tools for next-generation pharmaceutical supply chains</i>		
Dr Liding Xu	École Polytechnique	12/2023
<i>Relaxation methods for mixed-integer nonlinear programming</i>		
Dr Chrysoula Kappatou	RWTH Aachen	11/2020
<i>Dynamic Optimization Strategies for Monoclonal Antibody Production</i>		
Dr Mohammad Mehrian	Université de Liège	01/2019
<i>Development and optimization of in silico models of 2D cell expansion and 3D neotissue formation in the context of tissue engineering therapy design and translation</i>		
Dr Jean Kossaifi	Imperial	11/2018
<i>Machine learning methods for face modelling and analysis in-the-wild</i>		
Dr Jan Kronqvist	Åbo Akademi University	09/2018
<i>Polyhedral Outer Approximations in Convex Mixed-Integer Nonlinear Programming</i>		
Dr Robert Walecki	Imperial	06/2018
<i>Structured Machine Learning Methods for Automated Analysis of Facial Expressions</i>		
Dr Styliani Avraamidou	Imperial	02/2018
<i>Mixed-Integer Multi-level Optimization through Multi-Parametric Programming</i>		
Dr Ahmadreza Marandi	University of Tilburg	12/2017
<i>Aspects of Quadratic Optimization: Nonconvexity, Uncertainty, and Applications</i>		
Dr Juan Campos Salazar	Imperial	11/2017
<i>A multigrid approach to SDP relaxations of sparse polynomial optimization problems</i>		
Dr Fabian Rigterink	University of Newcastle	05/2017
<i>Pooling Problems: Advances in Theory and Applications</i>		
Dr Nikos Diangelakis	Imperial	03/2017
<i>Model-based multi-parametric programming strategies towards the integration of design, control and operational optimization</i>		

Dr Carlos Perez Galvan	University College London	02/2017
<i>Global Optimisation for Dynamic Systems using Novel Overestimation Reduction Techniques</i>		
Dr Tiberiu Chis	Imperial	04/2016
<i>Performance modelling with adaptive hidden Markov models and discriminatory process sharing queues</i>		
Dr Ioana Nascu	Imperial	04/2016
<i>Advanced multiparametric optimization and control studies for anaesthesia</i>		

PROFESSIONAL SERVICE

LEADERSHIP IN MY RESEARCH COMMUNITY

Vice Chair, INFORMS Optimization Society	2020 - 21
<i>I was Vice Chair for Computational Optimization & Software</i>	
Member, GAMS Advisory Board	2018 - 25
<i>Provide advice to the GAMS Development Corporation.</i>	
Programming Coordinator, AIChE Computing & Systems Technology Division	2018 - 21
<i>I am 10C (Systems & Process Operations) programming coordinator for 2021. For the years 2019 - 20, I assisted the current programming coordinator.</i>	
Director, AIChE Computing & Systems Technology Division	2016 - 18
<i>This is an elected post which several people hold simultaneously. During my tenure, I (i) overhauled the Student Travel Award, (ii) created an online Poster Kiosk to increase poster session prestige, (iii) initiated the Software Tools & Implementations session at the annual meeting, and (iv) reworked the Student Presentation Award process.</i>	
Management Committee Member, EU COST Action TD1207	2016 - 17
<i>Mathematical Optimization for Efficient & Robust Energy Networks</i>	

EDITORIAL WORK

<i>Associate Editor, Operations Research</i>	2024 - 25
<i>Areas: Data, Software, and Computation led by Prof T Ralphs Optimization led by Prof S Burer and Prof D Iancu</i>	
<i>Associate Editor, INFORMS Journal on Computing</i>	2019 -
<i>Area: Design & Analysis of Algorithms, led by Prof A Lodi</i>	
<i>Associate Editor, Optimization and Engineering</i>	2017 -
<i>Editorial Board, EURO Journal on Computational Optimization</i>	2021 -
<i>Editorial Board, Computers & Chemical Engineering</i>	2018 -
<i>Previously: Associate Editor 2020-22</i>	
<i>Editorial Board, Journal of Global Optimization</i>	2018 - 20
<i>Editorial Board, Mathematical Programming B</i>	2018 - 21
<i>Member, EPSRC Peer Review College</i>	2017 -

CONFERENCE & SEMINAR ORGANISATION

Organising Committee: SIAM Conference on Optimization (OP23)	2023
Organising Committee: 4 th IMA & OR Society Conference on Maths of Operational Research	2023
Imperial Mixed-Integer Nonlinear Optimization Workshop (held virtually)	2021
<i>Joint with Prof M Anjos, Dr P Belotti, Dr J Kronqvist</i>	
Dagstuhl Seminar on <i>Algorithms for Mixed-Integer Nonlinear Optimization</i> (18081)	2018
<i>Joint with Dr P Bonami, Dr A Gleixner, Prof J Linderoth</i>	
Organise the Imperial Centre for Process Systems Engineering Seminar Series	2015; 2016; 2020
Organising Committee: 17 th British-French-German Conference on Optimisation	2015

PROGRAM COMMITTEE MEMBERSHIPS

Area Chair, Conference on Neural Information Processing Systems	NeurIPS 2024
35 th AAAI Conference on Artificial Intelligence	AAAI 2021
30 th European Conference on Operational Research	EURO 2019

Co-chair of the <i>Software for Optimization</i> stream	
Integer Programming and Combinatorial Optimization (CORE A)	IPCO 2019
Foundations of Computer-Aided Process Design	FOCAPD 2019, 24
Chair of the FOCAPD 2019 <i>International Subcommittee</i>	
Mixed-Integer Programming Workshop	MIP 2018
Process Systems Engineering	PSE 2018
Co-chair of the PSE 2018 <i>Optimization Methods & Computational Tools</i> theme	
EUROPT Workshop on Advances in Continuous Optimization	EUROPT 2017, 18, 19
Computational Management Science	CMS 2017
European Symposium on Computer Aided Process Engineering	ESCAPE 2016-18, 21, 23
6 th INFORMS Optimization Society Conference	IOS 2016

SESSIONS CHAIRED AT MAJOR INTERNATIONAL CONFERENCES

Session Co-Chair, Software Tools and Implementations for Process Systems Engineering	AICHe 2021
Session Co-Chair, Interactive Session: Systems and Process Operations	AICHe 2021
Session Co-Chair, Advances in Optimization II	AICHe 2020
Session Co-Chair, CAST Director's Student Presentation Award Finalists	AICHe 2018
Session Co-Chair, Advances in Optimization Under Uncertainty	AICHe 2018
Session Chair, Optimization Methods & Computational Tools 1	PSE 2018
Session Co-Chair	ESCAPE 2018
Session Co-Chair, Advances in Optimization I	AICHe 2017
Session Chair, In memory of Christodoulos A. Floudas I, II, & III	EUROPT 2017
Session Co-Chair, Enabling Technologies I & II	FOCAPO 2017
Session Chair, Software Tools and Implementations for Process Systems Engineering	AICHe 2016
Session Co-Chair, Process Design II	AICHe 2016
Session Chair, Advances in Deterministic Global Optimization	ICCOPT 2016
Session Chair, Modelling, Numerical analysis, Simulation and Optimization	ESCAPE-26 2016
Session Chair, Software Tools and Implementations for Process Systems Engineering	AICHe 2015
Session Chair, Advances in Global Optimisation	ISMP 2015
Session Co-Chair, Modelling & Simulation	PSE-2015/ESCAPE-25 2015
Session Co-Chair: Supply Chain Optimization; Planning & Scheduling II	AICHe 2014
Invited Session Chair	INFORMS 2014
Poster Session Co-Chair	FOCAPD 2014

OTHER PARTICIPATION

<i>Panelist</i> , RAEng Research Chair / Senior Research Fellowship Promotion Webinar	2024
<i>Member</i> , UKRI Turing AI World-Leading Researcher Fellowships panel (Round 3)	2024
<i>Mentor</i> , RAEng Research Fellowship Access Mentoring Programme	2023
<i>Award Committee Chair</i> , COIN-OR Cup	2023
<i>Committee Chair</i> , Student Paper Prize, <i>INFORMS Optimization Society</i>	2021
<i>Award Committee Member</i> , Best Paper, <i>Journal of Global Optimization</i>	2018
Amazon Supply Chain Optimization Summit	09/10/2017
EPSRC Operational Research Theme Day	15/09/2015

DEPARTMENTAL & COLLEGE SERVICE

<i>Member</i> , BASF Strategic Partnership Committee	2022 -
<i>Member</i> , Departmental Hiring Committee	2022
<i>Staff Ambassador for Women</i> , Department of Computing	2022 -
<i>Member</i> , Departmental Promotions Committee	2021, 22
<i>Member</i> , Energy Futures Laboratory Technical Working Group	2017-20
<i>Member</i> , Department of Computing Equality, Diversity & Education Committee	2017-20
<i>Member</i> , Departmental Management Committee	2016-18, 2021-23

PEER REVIEW

AAAI, ADCHEM, AICHe Journal, Chemical Engineering Research & Design, Computational Optimization & Applications, Computers & Chemical Engineering (**Top Reviewer, 2013, Top 10% in**

reviews completed, 2014 - 2015 & 2016 - 2017), Computers & Operations Research, European Journal of Operational Research, Fuel, Industrial & Engineering Chemistry Research, International Conference on Machine Learning, Journal of Global Optimization, Journal of Optimization Theory & Applications, Management Science, Mathematical Programming (A, B & C), NeurIPS (**Top Reviewer, 2022 & 2023**), Operations Research, Operations Research Letters, Optimization Letters, SIAM Journal on Optimization

COMMUNITY OUTREACH & SERVICE

Panelist, WISDOM (women's forum) at the 31 st European Conference on Operational Research	2021
Speed mentoring event for AnitaB.org at the Twitter London office	2018
Voice of the Future, pose questions to Ministers and scientific advisers in London Parliament	2016
Interviewed for a short film highlighting RAEng research activities	2015, 17
Panel Discussion Chair at the 1 st ACM-W UK Inspire Celebration of Women in Computing	2015
Lecture at the Engineering Summer School for Girls	2015
Organise a booth at Imperial Festival highlighting the BSEL Blood Factory	2013, 15
Give public laboratory tours for the Biological Systems Engineering Laboratory	2012 - 2014
Teach Beginning Algebra at ACW Youth Correctional Facility	2010 - 2012
MIT Educational Counsellor; interview prospective MIT students	2007 - 2012
Co-facilitator and program participant at MIT LeaderShape	2006 - 2007

AFFILIATIONS

<i>Senior Member</i> , American Institute of Chemical Engineers	AICHE 2008 -
<i>Member</i> , British Computer Society	BCS 2017 -
Chartered Engineer	CEng 2019 -
Fellow	FBCS 2020 -
<i>Member</i> , Sargent Centre for Process Systems Engineering	CPSE 2014 -
<i>Academic Fellow</i> , Data Science Institute	DSI 2018 -
<i>Member</i> , Institute for Operations Research & Management Sciences	INFORMS 2014 -
<i>Member</i> , Tau Beta Pi – Engineering Honor Society	TBP 2007 -
The top 20% of MIT Engineering Undergraduates are eligible for TBP	