

William CULHANE

PERSONAL DATA

ADDRESS: Department of Computing, Imperial College London
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EDUCATION

- MAY 2015 **Purdue University** | West Lafayette, IN
PhD in Computer Science
Thesis: *Optimal "Big Data" Aggregation Systems – From Theory to Practical Application*
Advised by Professor Patrick Eugster
- MAY 2011 **Purdue University** | West Lafayette, IN
MS in Computer Science
- JUNE 2008 **Ohio State University** | Columbus, OH
BS in Computer Science and Engineering, Music Minor
Thesis: *Statistical Measures as Predictors of Compression Savings*
Cum Laude with Distinction (Research Option) and Honors.

WORK EXPERIENCE

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| <i>Current</i>
SINCE 2015 | Research Associate at Imperial College London, UK
<i>Large Scale Distributed Systems Group</i>
Designed and developed systems for processing big data in distributed systems. Special emphasis on addressing network skew in joins and eliminating redundant workflow in exploratory systems. Also designed limited amounts of coursework and pursued the interests of Research Associates in Computing to the department and college as a Research Associate Representative. |
| 2012-15 | Research Assistant at Purdue University West Lafayette, IN
<i>Secure Software Systems Lab, Distributed Programming Group</i>
Participated in research projects from inception through publication in both primary and supportive roles. Maintained a specific emphasis on algorithms in big data processing and aggregation across multiple nodes in a cloud computing environment. |
| SUMMER 2012 | Research Intern at Qatar University Doha, Qatar
Worked on a project attempting to provide normal database functions for databases with relations anonymized for privacy protection. Third party database servers were unable to know traditional 1-to-1 relations, so new algorithms were needed to efficiently return minimal knowable results to a client for final de-anonymization and filtering. |
| SUMMER 2010 | Summer Intern at Google Inc. NYC, NY
<i>Techstop Online</i>
Fixed bugs and added new functionality to internal tools. The biggest focus was the techstop bot, which manages incoming techstop requests and tries to redirect the user through the best resolution avenue. |

SUMMERS 2006-9	Summer Intern at NCR Dayton, OH <i>Professional Services and Gasper Division</i> Tested ATM software and bug fixes. Developed and implemented testing plans and documents for new devices. Fixed defects in software for tracking the status of ATMs.
ACADEMIC YEARS 2008-13	Teaching Assistant at Purdue University West Lafayette, IN <i>EPICS</i> Acted as a resource for students working on community service projects as part of a program to give students real world experiences in project management, development, and deployment as part of a multi-disciplinary curriculum. Graded work and documentation. <i>Won the Magoon Award for Excellence in Teaching in 2012.</i>
ACADEMIC YEARS 2006-8	Teaching Assistant at Ohio State University Columbus, OH Graded student labs and homework assignments for the introductory CS courses. Helped students who needed extra time to understand concepts.

PUBLICATIONS

- L. Rupperecht, W. Culhane, P. Pietzuch. *SquirrelJoin: Network-Aware Distributed Join Processing with Lazy Partitioning*. Proceedings of the VLDB Endowment 2017.
- W. Culhane, P. Eugster, C. Jayalath, K. Kogan, and J. Stephen. *Encyclopedia of Cloud Computing, chapter Cloud Integration and Federation*. Wiley and Associates 2016.
- W. Culhane. *Optimal "Big Data" Aggregation Systems – From Theory to Practical Application*. Purdue University PhD Thesis 2015.
- W. Culhane, K. Kogan, C. Jayalath, and P. Eugster. *Optimal Communication Structures for Big Data Aggregation*. INFOCOM 2015.
- K. Kogan, S. Nikolenko, O. Rottenstreich, W. Culhane, P. Eugster. *Exploiting Order Independence for Scalable and Expressive Packet Classification*. IEEE/ACM Transactions on Networking, 2015.
- W. Culhane, K.R. Jayaram, and P. Eugster. *Fast, Expressive Top-k Matching*. Middleware 2014.
- K. Kogan, S. Nikolenko, O. Rottenstreich, W. Culhane, and P. Eugster. *SAX-PAC (Scalable And eXpressive PAcKet Classification)*. SIGCOMM 2014.
- W. Culhane, K. Kogan, C. Jayalath, and P. Eugster. *LOOM: Optimal Aggregation Overlays for In-Memory Big Data Processing*. HotCloud 2014.
- K. Kogan, S. Nikolenko, W. Culhane, P. Eugster, and E. Ruan. *Towards Efficient Classification in SDN/OpenFlow*. HotSDN 2013.
- W. Culhane, K.R. Jayaram, and P. Eugster. *Brief Announcement: Weighted Partial Message Matching for Implicit Multicast Systems*. DISC 2012.
- W. Culhane. *Statistical Measures as Predictors of Compression Savings*. Ohio State University Undergraduate Honors Thesis 2008.

LANGUAGES

Java, C++, PHP, SQL, JavaScript, HTML, Various Assembly Languages

GRADUATE COURSEWORK

Cloud Computing and Distributed Systems, Algorithm Design and Analysis, Databases and Distributed Databases, Networking and Communication, Software Engineering, Compilers and Programming Structures, Product Lifecycle Management, Embedded Systems, Data Mining, Operating Systems, UX Design and User Centered Practices

HONORS AND ACTIVITIES

- Research Associate Representative for Computing at Imperial College London (2016-7).
- Primary contributor to the LSDS research group's placement in the Google Hall of Fame (2016).
- Magoon Award for Excellence in Teaching from the College of Engineering at Purdue University (2012).
- Outstanding Leadership Service Pin from the National Residence Hall Honorary (NRHH) (2012).
- NRHH Boilermaker Chapter Webmaster (2011-3) and Induction Chair (2014).
- NRHH Scarlet and Gray Chapter Secretary (2007-8).
- Jammer for the British Roller Derby Championships Men's Tier 2 National Champions, Mild Discomfort (2017).
- Coach for the London Skaters Speed Team (2016-7).
- Coach for the Logansport Speed Demons speed skating team (2013-5).
- Captain for Team Illini speed skating team (2013-4).
- 8 USA Roller Sports Indoor National Championship medals in speed skating (2001-15).
- Whitewater rafting guide on the New River in West Virginia.
- Athletic Band member (Ohio State, 2004-8) and Concert Band member (Purdue, 2009-12).
- National Merit Finalist (2004).