
Research Interests: Realistic computer graphics, appearance modeling, computational photography, vision for graphics.

CURRENT APPOINTMENT:

Senior Lecturer, Dept. of Computing, Imperial College London.

PREVIOUS POSITIONS:

Research assistant professor, Dept. of Computer Science, University of Southern California 2009-2012.
Senior computer scientist, Graphics Lab., USC Institute for Creative Technologies 2007-2012.

EDUCATION:

2003 – 2007 PhD in Computer Science. The University of British Columbia, Canada.
Supervisor - Prof. Wolfgang Heidrich.

2000 – 2003 MS in Computer Science, Stony Brook University, USA.
Advisor - Distinguished Prof. Arie Kaufman.

1996 – 2000 BE in Computer Science and Engineering, Gujarat University, India.

Ph.D. THESIS:

Realistic Materials and Illumination Environments. The University of British Columbia, June 2007,
(recipient of 2007 Alain Fournier PhD Thesis Award).

GRANTS AND CONTRACTS:

- **UK SIN-Korea Global Partnership Fund** – £10K for UK-Korea Focal Point Project, 2017.
- **NVIDIA GPU Grant** – Titan Xp GPU provided by Nvidia, 2017.
- **EPSRC Early Career Fellowship EP/N006259/1** – £1,255,111 (EPSRC contribution 80%), Computational imaging and analysis of scene appearance, Mar. 2016 - Feb. 2021.
- **Royal Society International Scientific Seminar** – £5,000 travel support + two nights stay for 20 participants at Chicheley Hall, Imaging in Graphics, Vision and Beyond, 2015-16.
- **EPSRC First Grant EP/M00192X/1** – £123,328 (EPSRC contribution 80%), On-site reflectometry in the real-world, 2015-16.
- **Google Faculty Research Award** – \$67.5K, On-site reflectometry in the real-world, 2014.
- **Royal Society Wolfson Research Merit Award** – £62.5K, Appearance modelling for realistic computer graphics, 2013-17.
- **NSF grant IIS-1016703** (with Dr. Pieter Peers) – \$475K, Higher order statistics for appearance modeling, 2010-13.
- **AVON contract** – \$100K, Acquisition and rendering of faces with and without makeup, 2010-11.
- **USC-ICT seedling grant** (with Dr. Louis-Philippe Morency) – \$100K, Appearance models for facial expression recognition, 2009-10.

RECOGNITION AND AWARDS:

- **EPSRC Early Career Fellowship** 2016-20.
- **Royal Society Wolfson Research Merit Award** 2013-17.
- **Motion Picture Film Credit** – AVATAR, Lightstage facial capture, 2009.
- **Alain Fournier Thesis Award** – Best Canadian PhD thesis in computer graphics in 2007.

- **IEEE Marr Prize Honorable Mention** – ICCV 2007 best paper award.
- **University Graduate Fellowship** – The University of British Columbia, 2005 - 06.
- **ATI Technologies Fellowship** 2004 - 05 (4 awards world-wide).
- **IRIS/Precarn Fellowship** 2003 - 04.
- **University Fellowship** – Stony Brook University, 2002 - 03.

JOURNAL PUBLICATIONS:

- **Acquiring Spatially Varying Appearance of Printed Holographic Surfaces.** Antoine Toisoul, Daljit Singh Dhillon, Abhijeet Ghosh. To appear in ACM Transactions on Graphics (Proc. SIGGRAPH Asia), 37(6), 2018.
- **Practical Dynamic Facial Appearance Modeling and Acquisition.** Paulo Gotardo, Jeremy Riviere, Derek Bradley, Abhijeet Ghosh, Thabo Beeler. To appear in ACM Transactions on Graphics (Proc. SIGGRAPH Asia), 37(6), 2018.
- **Polarized Light Field Imaging for Single-Shot Reflectance Separation.** Jaewon Kim and Abhijeet Ghosh. To appear in Sensors (special issue on Snapshot Multi-Band Spectral and Polarization Imaging Systems), 2018.
- **Practical Acquisition of Axially-Symmetric Transparent Objects and Common Liquids using Polarized Transmission Imaging.** Jaewon Kim, Ilya Reshetouski, Abhijeet Ghosh. Conditionally accepted to International Journal of Computer Vision (IJCV), 2018 (major revision).
- **Polarization Imaging Reflectometry in the Wild.** Jérémy Riviere, Ilya Reshetouski, Luka Filipi, Abhijeet Ghosh. ACM Transactions on Graphics (Proc. SIGGRAPH Asia), 36(6), 2017.
- **Practical Acquisition and Rendering of Diffraction Effects in Surface Reflectance.** Antoine Toisoul and Abhijeet Ghosh. ACM Transactions on Graphics, 36(5), 2017 (presented at SIGGRAPH 2017).
- **BRDF Representation and Acquisition.** Dar'ya Guarnera, Giuseppe Claudio Guarnera, Abhijeet Ghosh, Cornelia Denk, Mashuda Glencross. Computer Graphics Forum (Eurographics'16 STAR Report), 35(2), 2016.
- **Near-Instant Capture of High-Resolution Facial Geometry and Reflectance.** Graham Fyffe, Paul Graham, Borom Tunwattanapong, Abhijeet Ghosh, Paul Debevec. Computer Graphics Forum (Proc. Eurographics), 35(2), 2016.
- **Mobile Surface Reflectometry.** Jérémy Riviere, Pieter Peers, Abhijeet Ghosh. Computer Graphics Forum, 35(1): 191-202, 2016 (presented at Eurographics 2016).
- **Skin Microstructure Deformation with Displacement Map Convolution.** Koki Nagano, Graham Fyffe, Oleg Alexander, Jernej Barbič, Hao Li, Abhijeet Ghosh, Paul Debevec. ACM Transactions on Graphics (Proc. SIGGRAPH), 34(4), 2015.
- **Acquiring Reflectance and Shape from Continuous Spherical Harmonic Illumination.** Borom Tunwattanapong, Graham Fyffe, Paul Graham, Jay Busch, Xueming Yu, Abhijeet Ghosh, Paul Debevec. ACM Transactions on Graphics (Proc. SIGGRAPH), 32(4), 2013.
- **Estimating Diffusion Parameters from Polarized Spherical Gradient Illumination.** Yufeng Zhu, Pradeep Garigipati, Pieter Peers, Paul Debevec, Abhijeet Ghosh. IEEE CG&A Special Issue on Scattering May/June 2013.
- **Measurement Based Synthesis of Facial Microgeometry.** Paul Graham, Borom Tunwattanapong, Jay Busch, Xueming Yu, Andrew Jones, Paul Debevec, Abhijeet Ghosh. Computer Graphics Forum (Proc. Eurographics), 32(2), 2013.
- **Exploring the Effect of Illumination on Automatic Expression Recognition using the ICT-3DRFE Database.** Giota Stratou, Abhijeet Ghosh, Paul Debevec, Louis-Philippe Morency. Image and Vision Computing, 30(10), 728-737, 2012.
- **Multiview Face Capture using Polarized Spherical Gradient Illumination.** Abhijeet Ghosh, Graham Fyffe, Borom Tunwattanapong, Jay Busch, Xueming Yu, Paul Debevec. ACM Transactions on Graphics (Proc. SIGGRAPH Asia), 30(6), 2011.
- **Circularly Polarized Spherical Illumination Reflectometry.** Abhijeet Ghosh, Tongbo Chen, Pieter Peers, Cyrus A. Wilson, Paul Debevec. ACM Transactions on Graphics (Proc. SIGGRAPH Asia), 29(5), 2010.
- **Temporal Upsampling of Performance Geometry using Photometric Alignment.** Cyrus A. Wilson, Abhijeet Ghosh, Pieter Peers, Jen-Yuan Chiang, Jay Busch, Paul Debevec. ACM Transactions on Graphics, 29(2), March 2010.
- **A Basis Illumination Approach to BRDF Measurement.** Abhijeet Ghosh, Wolfgang Heidrich, Shruthi Achutha, and Matthew O'Toole. International Journal of Computer Vision (Marr Prize special issue: ICCV07), 90(2): 183-197, 2010.
- **Estimating Specular Roughness and Anisotropy from Second Order Spherical Gradient Illumination.** Abhijeet Ghosh, Tongbo Chen, Pieter Peers, Cyrus A. Wilson, Paul Debevec. Computer Graphics Forum (Proc. EGSR), 28(4), 1161-1170, 2009.
- **Compressive Light Transport Sensing.** Pieter Peers, Dhruv K. Mahajan, Bruce Lamond, Abhijeet Ghosh, Wojciech Matusik, Ravi Ramamoorthi, Paul Debevec. ACM Transactions on Graphics, 28(1), January 2009.
- **Practical Modeling and Acquisition of Layered Facial Reflectance.** Abhijeet Ghosh, Tim Hawkins, Pieter Peers, Sune Frederiksen, Paul Debevec. ACM Transactions on Graphics (Proc. SIGGRAPH Asia), 27(5), 2008.

- **Correlated Visibility Sampling for Direct Illumination.** Abhijeet Ghosh and Wolfgang Heidrich. *The Visual Computer (Proc. of Pacific Graphics)* 22: 693-701, 2006.
- **High Dynamic Range Display Systems.** Helge Seetzen, Wolfgang Heidrich, Wolfgang Stuerzlinger, Greg Ward, Lorne Whitehead, Matthew Trentacoste, Abhijeet Ghosh, Andrejs Vorozcovs. *ACM Transactions on Graphics (Proc. SIGGRAPH)*, 23(3): 760-768, 2004.
- **Simple Blurry Reflections with Environment Maps.** Michael Ashikhmin and Abhijeet Ghosh. *Journal of Graphics Tools*, 7(4): 3-8, 2002.

CONFERENCE PUBLICATIONS:

- **Diffuse-Specular Separation using Binary Spherical Gradient Illumination.** Christos Kampouris, Stefanos Zafeiriou, Abhijeet Ghosh. *Proc. of Eurographics Symposium on Rendering (EGSR EI&I)*, June 2018.
- **ICL Multispectral Lightstage: building a versatile LED sphere with off-the-shelf components.** Christos Kampouris and Abhijeet Ghosh. *Proc. of EG Workshop on Material Appearance Modeling (MAM)*, June 2018.
- **Real-time Rendering of Realistic Surface Diffraction with Low Rank Factorization.** Antoine Toisoul and Abhijeet Ghosh. *European Conference on Visual Media Production (CVMP)*, Dec. 2017.
- **ThirdLight: Low-Cost and High-Speed 3D Interaction Using Photosensor Markers.** Jaewon Kim, Gyuchull Han, Hwasup Lim, Shahram Izadi, Abhijeet Ghosh. *European Conference on Visual Media Production (CVMP)*, Dec. 2017.
- **Acquiring Axially-Symmetric Transparent Objects using Single-View Transmission Imaging.** Jaewon Kim, Ilya Reshetouski, and Abhijeet Ghosh. *IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, July 2017.
- **Image-Based Relighting using Room Lighting Basis.** Antoine Toisoul and Abhijeet Ghosh. *European Conference on Visual Media Production (CVMP)*, Dec. 2016.
- **Efficient surface diffraction renderings with Chebyshev approximations.** Daljit Singh Dhillon and Abhijeet Ghosh. *SIGGRAPH Asia'16 Technical Briefs*, Dec. 2016.
- **Fine-grained Material Classification using Micro-geometry and Reflectance.** Christos Kampouris, Stefanos Zafeiriou, Abhijeet Ghosh, Sotiris Malassiotis. *European Conference on Computer Vision (ECCV)*, October 2016.
- **Single-shot layered reflectance separation using a polarized light field camera.** Jaewon Kim, Shahram Izadi, Abhijeet Ghosh. *Proc. of Eurographics Symposium on Rendering (EGSR) EI&I*, June 2016.
- **Re-rendering Landscape Photographs.** Pu Wang, Diana Bicanzan, Abhijeet Ghosh. *European Conference on Visual Media Production (CVMP)*, 2014.
- **Estimating Surface Normals From Spherical Stokes Reflectance Fields.** Giuseppe Claudio Guarnera, Pieter Peers, Paul Debevec, Abhijeet Ghosh. *ECCV Workshop on Color and Photometry in Computer Vision (CPCV)*, 2012.
- **Practical Image-Based Relighting and Editing with Spherical Harmonics and Local Lights.** Borom Tunwattanapong, Abhijeet Ghosh, Paul Debevec. *European Conference on Visual Media Production (CVMP)*, London, 2011.
- **Facial Cartography: Interactive Scan Correspondance.** Cyrus A. Wilson, Oleg Alexander, Borom Tunwattanapong, Pieter Peers, Abhijeet Ghosh, Jay Busch, Arno Hartholdt, Paul Debevec. *ACM/Eurographics Symposium on Computer Animation (SCA)* 2011.
- **Effect of Illumination on Automatic Expression Recognition: A Novel 3D Relightable Facial Database.** Giota Stratou, Abhijeet Ghosh, Paul Debevec, Louis-Philippe Morency. *IEEE International Conference on Automatic Face and Gesture Recognition (FG 2011)*, Santa Barbara, USA, March 2011.
- **Image-based Separation of Diffuse and Specular Reflections using Environmental Structured Illumination.** Bruce Lamond, Pieter Peers, Abhijeet Ghosh, Paul Debevec. *International Conference on Computational Photography (ICCP)*, April 2009.
- **BRDF Acquisition with Basis Illumination.** Abhijeet Ghosh, Shruthi Achutha, Wolfgang Heidrich, and Matthew O'Toole. *Proc. of IEEE International Conference on Computer Vision (ICCV) 2007* (oral presentation, Marr Prize Honorable mention).
- **Active Learning from Discrete Choice Data.** Eric Brochu, Nando de Freitas and Abhijeet Ghosh. *Advances in Neural Information Processing Systems (NIPS)* 2007.
- **Sequential Sampling for Dynamic Environment Map Illumination.** Abhijeet Ghosh, Arnaud Doucet, and Wolfgang Heidrich. *Proc. of Eurographics Symposium on Rendering* 2006, pp.115-126.
- **Real Illumination from Virtual Environments.** Abhijeet Ghosh, Matthew Trentacoste, Helge Seetzen and Wolfgang Heidrich. *Proc. of Eurographics Symposium on Rendering* 2005, pp. 243-252.
- **Bidirectional Importance Sampling for Direct Illumination.** David Burke, Abhijeet Ghosh and Wolfgang Heidrich. *Proc. of Eurographics Symposium on Rendering* 2005, pp. 147-156.
- **Volume Rendering for High Dynamic Range Displays.** Abhijeet Ghosh, Matthew Trentacoste and Wolfgang Heidrich. *Proc. of Volume Graphics* 2005, pp. 91-98.
- **Hardware Assisted Multichannel Volume Rendering.** Abhijeet Ghosh, Poojan Prabhu, Arie Kaufman and Klaus Mueller. *Computer Graphics International*, July 2003: 2-7, IEEE Computer Society Press.

INVITED CONTRIBUTIONS:

- **Measurement-Based Modelling of Facial and Material Appearance.** Abhijeet Ghosh. BMVC'16 Conference Tutorial, York, Sept. 2016.
- **Cook-Torrance BRDF model.** Abhijeet Ghosh. Computer Vision: a reference guide, pp. 146 – 152, 2014.
- **Measurement and Modeling of Detailed Facial Reflectance.** Abhijeet Ghosh. SIGGRAPH Asia 2012 Technical Brief and Talk.

OTHER REFEREED CONTRIBUTIONS:

- **Material Capture and Representation with Applications in Virtual Reality.** Giuseppe Claudio Guarnera, Abhijeet Ghosh, Ian Hall, Mashuda Glencross, Dar'ya Guarnera. SIGGRAPH 2017 Short Course.
- **Practical Acquisition of Translucent Liquids using Polarized Transmission Imaging.** Jaewon Kim and Abhijeet Ghosh. SIGGRAPH 2017 poster.
- **Real-time Rendering of Realistic Surface Diffraction with Low Rank Factorization.** Antoine Toisoul and Abhijeet Ghosh. SIGGRAPH 2017 poster.
- **Capturing and Representing BRDFs for Virtual Reality.** Dar'ya Guarnera, Giuseppe Claudio Guarnera, Abhijeet Ghosh, Ian Hall, Mashuda Glencross. SIGGRAPH Asia 2016 Short Course.
- **Near Instant Capture of High Resolution Facial Geometry and Reflectance.** Paul Graham, Graham Fyffe, Borom Tunwattanapong, Abhijeet Ghosh, Paul Debevec. SIGGRAPH 2015 Talk.
- **Image-Based Relighting using Room Lighting Basis.** Antoine Toisoul, Abhijeet Ghosh. SIGGRAPH 2015 Poster.
- **Mobile Surface Reflectometry.** Jérémy Riviere, Pieter Peers, Abhijeet Ghosh. SIGGRAPH 2014 poster.
- **Rerendering Landscape Photographs.** Pu Wang, Diana Bicanzan, Abhijeet Ghosh. SIGGRAPH 2014 poster.
- **Polarized Light in Computer Graphics.** Alexander Wilkie, Andrea Weidlich, Abhijeet Ghosh. SIGGRAPH Asia 2012 Half-Day Course.
- **Measurement Based Synthesis of Facial Microgeometry.** Paul Graham, Borom Tunwattanapong, Jay Busch, Xueming Yu, Andrew Jones, Paul Debevec, Abhijeet Ghosh. SIGGRAPH 2012 Technical Talk and Poster.
- **Estimating Specular Normals from Spherical Stokes Reflectance Fields.** Giuseppe Claudio Guarnera, Pieter Peers, Paul Debevec, Abhijeet Ghosh. SIGGRAPH 2012 Technical Talk and Poster.
- **Estimating Diffusion Parameters from Polarized Spherical Gradient Illumination.** Yufeng Zhu, Pieter Peers, Paul Debevec, Abhijeet Ghosh. SIGGRAPH 2012 Technical Talk and Poster.
- **Facial Cartography: Interactive Scan Correspondance.** Cyrus A. Wilson, Oleg Alexander, Borom Tunwattanapong, Pieter Peers, Abhijeet Ghosh, Jay Busch, Arno Hartholdt, Paul Debevec. SIGGRAPH 2011 Technical Talk.
- **Free-form Polarized Spherical Illumination Reflectometry.** Kaori Kikuchi, Bruce Lamond, Abhijeet Ghosh, Pieter Peers, Paul Debevec. SIGGRAPH Asia 2010 Sketch.
- **Combining Spherical Harmonics and Point-Source Illumination for Efficient Image-Based Relighting.** Borom Tunwattanapong, Abhijeet Ghosh, Paul Debevec. SIGGRAPH 2010 Poster.
- **Data-Driven Diffuse-Specular Separation of Spherical Gradient Illumination.** Tongbo Chen, Abhijeet Ghosh, Paul Debevec. SIGGRAPH 2009 poster.
- **Estimating Specular Roughness from Polarized Second Order Spherical Gradient Illumination.** Abhijeet Ghosh, Pieter Peers, Cyrus A. Wilson, Paul Debevec. SIGGRAPH 2009 Technical Talk.
- **2D and 3D Facial Correspondences via Photometric Alignment.** Cyrus A. Wilson, Abhijeet Ghosh, Pieter Peers, Jen-Yuan Chiang, Jay Busch, Paul Debevec. SIGGRAPH 2009 Technical Talk.
- **Considering Shape Reconstruction from Specular Reflection.** Tomohito Masueda, Abhijeet Ghosh, Wanchun Ma, Hiroki Unten, Paul Debevec. SIGGRAPH Asia 2008 Technical Sketch.
- **Estimating Multi-layer Scattering in Faces using Direct-Indirect Separation.** Abhijeet Ghosh and Paul Debevec. SIGGRAPH 2008 Technical Talk.
- **Preference Galleries for Material Design.** Eric Brochu, Abhijeet Ghosh and Nando de Freitas. SIGGRAPH 2007 Poster (Winner of the ACM Student Research Competition).
- **The D-BRDF Model as a Basis for BRDF Acquisition.** Abhijeet Ghosh and Wolfgang Heidrich. SIGGRAPH 2007 Poster.
- **Sequential Sampling for Dynamic Environment Maps.** Abhijeet Ghosh, Arnaud Doucet, and Wolfgang Heidrich. SIGGRAPH 2006 Technical Sketch.
- **Correlated Visibility Sampling for Direct Illumination.** Abhijeet Ghosh and Wolfgang Heidrich. SIGGRAPH 2005 Technical Sketch.
- **Real Illumination from Virtual Environments.** Abhijeet Ghosh, Matthew Trentacoste, Helge Seetzen and Wolfgang Heidrich. SIGGRAPH 2005 Technical Sketch.
- **Bidirectional Importance Sampling for Illumination from Environment Maps.** David Burke, Abhijeet Ghosh and Wolfgang Heidrich. SIGGRAPH 2004 Technical Sketch.

TEACHING EXPERIENCE:

- **Instructor for Advanced Computer Graphics – Photographic Image Synthesis (CO 417)** Spring 2013 - present, Imperial College London.
- Coordinator for Academic Writing in Computer Science (CO 520), Spring 2015, Imperial College London.
- Co-Instructor for Advanced Computer Graphics – Photographic Image Synthesis (CS 599) (with Dr. Paul Debevec and Dr. Pieter Peers), Spring 2009 and Spring 2010, University of Southern California.
- Teaching Assistant for Computer Graphics (CPSC 314), Summer Session 1, 2006, University of British Columbia.
- Teaching Assistant for Algorithm Design and Analysis (CPSC 320), Winter Term 2, 2003-04, University of British Columbia.
- Teaching Assistant for Computer Graphics (CPSC 414), Winter Term 1, 2003-04, University of British Columbia.
- Teaching Assistant for Object Oriented Program Design (CSE 219), Spring 2003, Stony Brook University.

RESEARCH SUPERVISION:

- Dr. Daljit Singh Dhillon – Supervision of postdoctoral researcher at Imperial College, Nov. 2017 – Oct. 2018. Computational methods for wave optics effects in appearance. Dr Dhillon was previously a visiting SNSF fellow in the Realistic Graphics & Imaging group from March 2016 – Aug. 2017. **(starting as an Assistant Professor at Clemson University, USA in Jan. 2019)**
- Yulia Gitlina – Supervision of ongoing doctoral research at Imperial College, since Oct. 2017. Multispectral appearance modelling.
- Yiming Lin – Supervision of ongoing doctoral research at Imperial College, since Oct. 2016. Example-based appearance modelling.
- Jaewon Kim – Supervision of ongoing doctoral research at Imperial College, Oct. 2015 – Aug. 2018. Polarized light field imaging and analysis **(viva completed, now Vice-President of inspection at Samsung Display)**.
- Antoine Toisoul – Supervision of ongoing doctoral research at Imperial College, since Oct. 2014. Wave effects in surface reflectance.
- Christos Kampouris – Co-supervision (with Dr. Stefanos Zafeiriou) of doctoral research at Imperial College, since Oct. 2013 – June 2018. Acquisition and analysis of microgeometry and reflectance **(awaiting viva)**.

PAST SUPERVISION:

Post-Doc

- Dr. Ilya Reshetouski – Supervision of postdoctoral research at Imperial College, Mar. 2015 – Oct. 2016. Computational photography for shape and appearance acquisition. (Now at Sony R&D, Japan)
- Dr. Tongbo Chen – Co-supervision (with Dr. Paul Debevec) of post-doctoral research at USC-ICT, 2009-10. Spherical illumination reflectometry.

PhD

- Dr. Jérémy Riviere – Supervision of doctoral research at Imperial College, 2013 – 2017. On-site surface reflectometry. (Currently a post-doctoral researcher at Disney Research Zurich)
- Dr. Paul Graham – Co-supervision (with Dr. Paul Debevec) of doctoral dissertation at USC-ICT, 2011-14. Synthesis of facial mesostructure and microgeometry.
- Dr. Borom Tunwattanapong – Co-supervision (with Dr. Paul Debevec) of doctoral dissertation at USC-ICT, 2010-14. Spherical harmonic and point illumination basis for reflectometry and image based relighting.
- Dr. Giuseppe Claudio Guarnera – Supervision of visiting doctoral student research, 2011-12, USC-ICT. Estimating surface normals from symmetric Stokes reflectance fields.

MSc/MEng

- MSc project supervision, summer 2018, Imperial College – Mingqian Wang (Efficient facial capture using light stage), Xiaoqing Huang (multispectral imaging using lightstage).
- MEng project supervision, 2017-18, Imperial College – Mridul Kumar (High-resolution facial capture using lightstage).
- MSc project supervision, summer 2017, Imperial College – Alix Feniès (Image based lighting reproduction using multispectral light stage)

- MEng project supervision, 2016-17, Imperial College – Xingze Tian (AR Animation with Google Tango).
- MSc project supervision, summer 2016, Imperial College – Luca Filipi (Mobile polarization imaging reflectometry), Desy Kristianti (image manipulations with flash no-flash image pairs).
- MEng project supervision, 2015-16, Imperial College – Zuhayr Chagpar (3D reconstruction of the Queen's Tower), Edwin Kamulegeya (Mobile light field capture and display).
- MSc project supervision, summer 2015, Imperial College – Ye Yu (Priors for Image deblurring), Jean Melou (Mobile light probe capture), Daiwei Guo (Face as light probe), Qiu Sun (Fitting analytic sky models to probes).
- MSc project supervision, summer 2014, Imperial College – Antoine Toisoul (Image based relighting using office room lighting), Tereza Drskova (Interface for image based relighting and editing), Susanne Hallauer (Relighting face in a photograph with known illumination), Kaiyang Chen (Face as a light probe).
- MEng project supervision, 2013-14, Imperial College – James Webb (Structured procedural worlds, distinguished project), David Elsey (Virtual game world).
- MSc project supervision, summer 2013, Imperial College – Jérémy Riviere (Parallel image based lighting using OpenCL), Pu Wang and Diana Biczazan (Rerendering landscape photographs), Ji Song (Global Illumination with Progressive Photon Mapping).
- Yufeng Zhu – Supervision of Masters directed research, 2011-12, USC-ICT. Real-time rendering with estimated layered subsurface scattering parameters.
- Kaori Kikuchi – Co-supervision (with Dr. Pieter Peers) of Master's thesis 2009-10, USC-ICT. Free-form polarized spherical illumination reflectometry.

BSc/BEng

- Christopher Conlan – Supervision of BEng project, Nov. 2017 – June 2018, Imperial College. Facial relighting using deep learning.
- Nandor Licker – Supervision of BEng project, Nov. 2015 – June 2016, Imperial College. Mobile augmented reality (best BEng project prize).
- Sabin Bhattarai – Supervision of BEng project, Nov. 2014 – June 2015, Imperial College. Programming of camera and controlled lighting systems for reflectance capture.
- Matthew O'Toole – Supervision of undergraduate honors thesis 2006-07, University of British Columbia. Real-time rendering of acquired BRDFs.

Interns/UROP

- Qingyue Yan and Kunal Katarya - Supervision of 10 weeks UROP in summer of 2018, Imperial. Programming for multispectral Light Stage.
- Husheng Deng - Supervision of 10 weeks UROP in summer of 2017, Imperial. Programming for multispectral Light Stage.
- Megan Lalla-Hamblin - Supervision of 10 weeks UROP in summer of 2013, Imperial. Reflectometry using Nvidia Tegra tablet.
- Pradeep Garigipati – Supervision of 3 month internship in summer 2012, USC-ICT. Analysis of spherical statistics of diffuse reflectance.
- Steven Breager – Supervision of 3 month internship in summer 2011, USC-ICT. Acquisition and analysis of higher order spherical statistics of material appearance.
- Jun Zheng – Supervision of 3 month internship in summer 2010, USC-ICT. Specular normal synthesis using stochastic super-resolution.
- Panagiota Stratou – Co-supervision (with Dr. Louis-Philippe Morency) of 3 month internship in summer 2009 and directed research in 2010, USC-ICT. Acquisition and relighting of facial expression and performance database.
- Tomohito Masueda – Co-supervision (with Dr. Paul Debevec) of 3 month internship in spring 2008, USC-ICT. Recovery of shape from specular reflection.

PhD EXAMINATION:

- External examiner appointment for UCL CS EngD candidate David Walton (viva planned Dec. 2018).
- Internal examiner appointment for Imperial DOC PhD candidate Vanya Valindria (viva planned Jan. 2019).
- Dr. James Booth (Imperial) – Internal examiner of PhD thesis on construction and application of 3D morphable model for in the wild facial modeling, 2018.
- Dr. Patrick Snape (Imperial) – Internal examiner of PhD thesis on 3D facial shape recovery, 2017.
- Dr. Jan Jachnik (Imperial) – Internal examiner of PhD thesis on light field and geometry acquisition, 2016.

- Dr. Katie Moore (College of William & Mary) – External examiner of PhD thesis on reflectance capture and editing techniques, 2016.
- Dr. Akis Tsotsios (Imperial) – Internal examiner of PhD thesis on under-water photometric stereo, 2015.
- Dr. Anustup Choudhury (USC) – Member of internal PhD advising and final examination committee on image enhancement techniques, 2010-12.
- Dr. Jun Zheng (UTEP) – External examiner of PhD thesis on stochastic super-resolution techniques, 2010.

PATENTS:

- **Multiview Face Capture using Polarized Spherical Gradient Illumination:** Paul Debevec, Abhijeet Ghosh, Graham Fyffe. U.S. Patent No. 9123116, September 1, 2015.
- **Illumination sphere with intelligent LED lighting units in scalable daisy chain with interchangeable filters:** Paul Debevec, Xueming Yu, Mark Bolas, Graham Fyffe, Jay Busch, Pieter Peers, Abhijeet Ghosh. U.S. Patent No. 8988599, March 24, 2015.
- **Apparatus and method for realistically expressing teeth:** Tae Hyun Rhee, Seon Min Rhee, Hyun Jung Shim, Do Kyoon Kim, Abhijeet Ghosh, Jay Busch, Matt Chiang, Paul Debevec. U.S. Patent No. 8976176, March 10, 2015.
- **Estimating spectral distribution of reflections from object surface based on low frequency illumination:** Paul E Debevec, Abhijeet Ghosh, Pieter Peers, Graham Fyffe. U.S. Patent No. 8300234, October 30, 2012.
- **Practical Modeling and Acquisition of Layered Facial Reflectance:** Paul E Debevec, Abhijeet Ghosh. U.S. Patent No. 8264490, September 11, 2012.

CONSULTING:

- Consultant on Facial Appearance Modelling, **Facesoft Ltd**, London, 2018 - present.
- Consultant on Facial Appearance Modelling, **Disney Research**, Zurich, 2016 - present.
- Consultant on Material Appearance Acquisition, **Foster + Partners**, London, 2015.
- Consultant on Facial Appearance Acquisition, **L'Oreal R&D**, Paris, 2014-15.
- Consultant on Light Stage based Facial Acquisition and Modeling, **Double Negative** visual effects, London, 2014.
- Consultant on Facial Reflectance Modeling for visual effects, **Jellyfish Pictures**, London, 2014.
- Consultant on Facial Reflectance Modeling for visual effects in **AVATAR**, **Weta Digital**, NZ, 2009.

KEYNOTE TALKS:

- **Computational Imaging for Appearance and Shape Acquisition.** MUVAPP Workshop, NTNU Color and Visual Computing Lab, Gjøvik, Norway, June 2017.
- **Light Stage Based Acquisition of High Resolution Facial Geometry and Appearance.** Mosaic3DX 2013, Cambridge, Oct. 2013;

SERVICE / ESTEEM FACTORS:

- **Journal Editorial**
 - Invited co-editor, Computer Graphics Forum (special issue on Pacific Graphics), 37(7), 2018.
- **Advisory Board**
 - Facesoft Ltd, since 2018.
- **Conference Organization**
 - Program co-chair, Pacific Graphics 2018
 - Conference chair, CVMP 2018
 - Full Papers chair, CVMP 2017
 - Organizer of Royal Society Research Fellow International Scientific Seminar (RFISS) on "Imaging in Graphics, Vision & Beyond", 2016
 - Short papers chair, CVMP 2016
 - Workshop and Program co-chair, IEEE Procams 2011
- **Grants Funding Panel**
 - EPSRC ICT Prioritisation Panel, December 2016
 - US NSF IIS 10-571 Graphics & Visualization program, 2011

- **Senior Program Committee/Area Chair**
 - SIGGRAPH Asia 2017/2013-14
 - EGSR 2014-16/2011-12
 - Pacific Graphics 2013/2006.
 - Declined invitations – SIGGRAPH 2019, SIGGRAPH Asia 2016/18, Eurographics 2014/18/19.
- **Program Committee** – CAD/Graphics 2015, CVPR CCD 2012-15, IEEE Procams 2012, CVMP 2012-13, Eurographics STAR Reports 2015-17, SIGGRAPH Asia Sketches and Posters 2010-11, Eurographics Short papers 2011/2010/2008, 3D PVT 2010, Graphics Interface 2008.
- **Paper Session Chair** – SIGGRAPH Asia 2017 (Reflectance & Scattering; High Performance Imaging), CVMP 2016 (Motion Capture), CVMP 2014 (Facial Capture), CVMP 2013 (Stereo and Hardware), SIGGRAPH Asia 2010 (Rendering), GI 2008 (Color and HDR).
- **External Reviewer (papers)** – SIGGRAPH 2004-18, SIGGRAPH Asia 2018/2015-16/2010-12, EG 2015-16/2013/2006-11, EGSR 2013/2006-10, ACM TOG, IEEE TVCG, IEEE PAMI, IEEE CG&A, JOSA, Computer Graphics Forum, IEEE TIP, ECCV 2012/2010, Pacific Graphics 2015/2012, GI 2009/2006, CGI 2006, I3D 03, VolVis-02, JGT, ACCV 2007, Computers&Graphics, IPSJ Trans. CVA, Computer Animation & Virtual Worlds.
- **External Reviewer (grants)** – EPSRC First Grant, 2015, EPSRC Fellowship 2018.
- **External Reviewer (courses)** – SIGGRAPH Asia 2008-09, Eurographics 2009.
- **Conference Tutorial** – SIGGRAPH 2017, BMVC 2016, SIGGRAPH Asia 2012.
- PhD mentor – mentor for cohort of PhD students, 2014-present, Imperial.
- Graduate Admissions – volunteer for evaluating graphics PhD applicants, 2012, USC.
- Faculty Recruiting Committee – elected student representative 2006-07, UBC.
- Graduate Admissions Committee – elected student representative 2005-06, UBC.
- PhD Breadth committee volunteer – 2005-06, UBC.
- AMoRe (Imager Graphics Lab) research meetings coordinator 2003 - 07, UBC.

INVITED TALKS:

- **Measurement Based Appearance Modeling for Realistic Computer Graphics** – Cambridge University, Computer Laboratory - Babbage Series Colloquium, Nov. 2018.
- **Computational Imaging for Appearance Modeling.** UCL Graphics and Vision group, Nov. 2016.
- **Measurement Based Appearance Modeling.** BMVC 2016 Conference Tutorial, York, September 2016.
- **Imaging Wave Effects in Appearance.** Royal Society International Scientific Seminar on “Imaging in Graphics, Vision & Beyond”, Chicheley Hall, May 2016.
- **Acquisition and Modeling of Facial and Material Appearance.** University of Bath Graphics and Vision group, Sept. 2013; Double Negative VFX R&D, Apr. 2014; University of Surrey CVSSP, June 2014; Univ. of York CS Dept. seminar, April 2015.
- **Light Stage Based Acquisition of High Resolution Facial Geometry and Appearance.** Imperial GaME 2013 event, May 2013; Loughborough University, Apr. 2014.
- **Measuring Facial Microgeometry and Subsurface Scattering using Polarized Spherical Gradient Illumination.** UCL Graphics group, April 2013.
- **Appearance Modeling for Realistic Computer Graphics** – Dept. of Computing, Imperial College London, Feb. 2011; CS Department, UC Santa Cruz, CA, June 2011; CS Department, College of William and Mary, VA, Sept. 2011.
- **Polarized Illumination Reflectometry** – Optical Society of Southern California, Playa Vista, CA, Nov. 2010.
- **Polarized Spherical Illumination Reflectometry** – University of British Columbia, Vancouver, BC, Aug. 2010.
- **Measurement and Modeling of Layered Facial Reflectance** – Avon Product R&D, Suffern, NY, Sept. 2009.
- **Measurement and Modeling of Material and Facial Reflectance** – Florida State University, Tallahassee, July 2009.
- **Practical Modeling and Acquisition of Facial Appearance and Performance** – Weta Digital, Wellington, New Zealand, June 2009.
- **Measurement, Modeling and Rendering for Realistic Computer Graphics** – CS Colloquium, University of Southern California, March 2009.
- **Measurement and Modeling of Material and Facial Reflectance** – Technische Universität Darmstadt, Germany, June 2008.
- **Realistic Materials and Illumination Environments** – USC Institute for Creative Technologies and Digital Domain Inc., Marina del Rey, CA, April 2007.
- **Sequential Sampling of Environment Maps** – INRIA Futurs, Bordeaux, France, July 2006.
- **High Dynamic Range Acquisition and Display** – UVP Biotech Imaging Systems, Upland, CA, August 2005.

- **Real Illumination from Virtual Environments** – Université de Montréal, July 2005; Bauhaus University at Weimar, Germany, July 2005.
- **Bidirectional Importance Sampling for Direct Illumination** - Bauhaus University at Weimar, July 2005.
- **Volume Rendering for High Dynamic Range Displays** – INRIA Futurs, Bordeaux, France, June 2004.

CONFERENCE TALKS:

- **Diffuse-Specular Separation using Binary Spherical Gradient Illumination.** EGSR '18, Karlsruhe, Germany, Jun. 2018.
- **Measurement Based Synthesis of Facial Microgeometry.** SIGGRAPH 2012, Technical Talk, Aug. 2012.
- **Estimating Specular Normals from Spherical Stokes Reflectance Fields.** SIGGRAPH 2012 Technical Talk, Aug. 2012.
- **Estimating Diffusion Parameters From Polarized Spherical Gradient Illumination.** SIGGRAPH 2012 Technical Talk, Aug. 2012.
- **Multiview Face Capture using Polarized Spherical Gradient Illumination.** SIGGRAPH Asia 2011, Hong Kong, Dec. 2011.
- **Circularly Polarized Spherical Illumination Reflectometry.** SIGGRAPH Asia 2010, Seoul, Dec. 2010.
- **Estimating Specular Roughness and Anisotropy from Second Order Spherical Gradient Illumination.** EGSR 2009, Girona, Spain, June 2009; SIGGRAPH 2009 Technical Talk, Aug. 2009.
- **Practical Modeling and Acquisition of Layered Facial Reflectance.** SIGGRAPH Asia 2008, Singapore, Dec. 2008.
- **Estimating Multi-layer Scattering in Faces using Direct-Indirect Separation.** SIGGRAPH 2008 Technical Talk, Aug. 2008.
- **BRDF Acquisition with Basis Illumination** – ICCV 2007 oral presentation, Rio de Janeiro, Brazil, October 2007.
- **Sequential Sampling of Environment Maps** – Eurographics Symposium on Rendering 2006, Nicosia, Cyprus, June 2006; SIGGRAPH 2006 Sketch talk, August 2006.
- **Correlated Visibility Sampling for Direct Illumination** – SIGGRAPH 2005 Sketch talk, August 2005; Pacific Graphics 2006, Taipei, Taiwan, October 2006.
- **Real Illumination from Virtual Environments** – Eurographics Symposium on Rendering 2005, Konstanz, Germany, July 2005.
- **Bidirectional Importance Sampling for Direct Illumination** – Eurographics Symposium on Rendering 2005, Konstanz, Germany, July 2005.
- **Volume Rendering for High Dynamic Range Displays** – Volume Graphics 05, Stony Brook, NY, June 2005.

PROFESSIONAL EXPERIENCE:

- Visiting researcher (May-June 2009), Weta Digital R&D. Hosted by Sebastian Sylwan.
- Research Internship (summer 2003), USC Institute for Creative Technologies. Supervised by Dr. Paul Debevec. Real-time rendering with high dynamic range lighting for Linear Light Source Reflectometry project.
- Research assistant (2000 - 03), Visualization Lab., Computer Science Department, Stony Brook University. Parallel volume rendering with special purpose hardware. Supervised by Prof. Arie Kaufman.
- Research apprenticeship (1999 - 00), ISRO Space Application Centre, Ahmedabad, India. Multispectral classification of remote sensing data using artificial neural networks. Supervised by Dr. A Senthil Kumar.

MEDIA COVERAGE:

- [Work on skin microgeometry deformation featured by Imperial communication and covered by Gizmodo, FXguide](#) – August 20, 2015.
- [Work on skin reflectance covered in New Scientist, The Times, Daily Mail and Gizmodo](#) – April 2, 2013.
- [Imperial academic wins Royal Society Wolfson Research Merit Award](#) – Feb. 8, 2013.
- [KTLA features work on ICT Light Stage](#) – Nov. 28, 2012.
- [fxguide podcast features Abhijeet Ghosh's interview](#) – Sept. 17, 2012.
- [ICT researcher earns special effects credit in AVATAR](#) – Dec. 18, 2009.
- [ICT computer scientist wins Alain Fournier Award](#) – Apr. 29, 2008.