Je Hyeong Hong

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Research Interests

Optimization problems and approaches in computer vision and machine learning:

- Matrix factorization with missing data
- Structure-from-motion (SfM)
- Bivariate and other nonlinear optimization problems

Education

Jan 2014–Present	**PhD in Computer Vision**, *Christ's College, University of Cambridge*, UK.

- Supervisor: Prof. Roberto Cipolla
- Advisors: Dr Andrew Fitzgibbon and Dr Christopher Zach
- Tuition fees and maintenance funded by Microsoft Research and Toshiba Research Europe.
- *Submitted* thesis on 5th March 2018.

Oct 2011–Nov 2012	**CPGS in Chemical Engineering**, *Christ's College, University of Cambridge*, UK.

- Thesis: *Bayesian Error Propagation for a Kinetic Model of n-Propylbenzene Oxidation*
- Tuition fees and maintenance funded by UK EPSRC.

Oct 2007–Jun 2011	**MEng and BA (Hons) in Electrical and Information Sciences**, *Homerton College, University of Cambridge*, UK, Distinction (Top 20.9% in the final year).

- Dissertation: *From Microeconomics and Game Theory to Distributed Control*

Peer-reviewed Publications

Jun 2018 **J.H. Hong** and C. Zach. pOSE: Pseudo Object Space Error for Initialization-free Bundle Adjustment. In *Proceedings of the 2018 IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, to appear.

Jul 2017 **J.H. Hong**, C. Zach and A.W. Fitzgibbon. Revisiting the Variable Projection Method for Separable Nonlinear Least Squares Problems. In *Proceedings of the 2017 IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, pages 127–135, 2017.

Oct 2016 **J.H. Hong**, C. Zach, A.W. Fitzgibbon and R. Cipolla. Projective Bundle Adjustment from Arbitrary Initialization using the Variable Projection Method. In *Proceedings of the 14th European Conference on Computer Vision (ECCV)*, pages 477–493, 2016.

Dec 2015 **J.H. Hong** and A.W. Fitzgibbon. Secrets of Matrix Factorization: Approximations, Numerics, Manifold Optimization and Random Restarts. In *Proceedings of the 2015 IEEE International Conference on Computer Vision (ICCV)*, pages 4130–4138, 2015.

Mar 2014 S. Mosbach, **J.H. Hong**, G.P.E. Brownbridge, M. Kraft, S. Gudiyella, and K. Brezinsky. (2014). Bayesian Error Propagation for a Kinetic Model of n-Propylbenzene Oxidation in a Shock Tube. *International Journal of Chemical Kinetics*, 46(7):389–404, 2014.

Research Experience

Mar 2018–Jun 2018 **Software Engineering Intern**, *Snap Inc.*, Los Angeles, USA.
Plans to investigate on a large-scale optimization project.

Sep 2017–Dec 2017 **Research Intern**, *Oculus Research (Facebook)*, Redmond (WA), USA.
Research on optimization problems associated with eye tracking for VR headsets.

Apr 2017–Aug 2017 **Research Intern**, *Toshiba Research Europe*, Cambridge, UK.
Investigated on a structure-from-motion strategy with wider basin of convergence.

Jul 2015–Oct 2015 **Research Intern**, *Toshiba Research Europe*, Cambridge, UK.
Investigated on widening the convergence basin of a projective bundle adjustment algorithm.

Feb 2015–Jun 2015	**Contract Researcher**, *Microsoft Research*, Cambridge, UK.
	Developed an efficient optimizer employing the variable projection (VarPro) method for solving matrix factorization problems from arbitrary initialization.
Jul 2014–Oct 2014	**Research Intern**, *Microsoft Research*, Cambridge, UK.
	Investigated on various approaches for solving matrix factorization problems in computer vision and machine learning.

Teaching Experience

May 2014–Apr 2017	**Teaching Assistant**, *University of Cambridge*, UK.

- Taught several information engineering modules to 3rd year engineering undergraduates.
- Demonstrated various lab sessions for engineering undergraduate students around all years.
- Held Q&A sessions for masters students and marked exam courseworks.
  - Module: 4F13 - Machine Learning (led by Prof. Zoubin Gharamani)

Jun 2013–Nov 2013	**Research Assistant**, *University of Cambridge*, Cambridge, UK.

- Worked as a team on creating the website (i-want-to-study-engineering.org) for prospective engineering undergraduate applicants to provide a collection of interview-style questions.
- Supervisor: Prof. Richard Prager

Scholarships

Jul 2015–Mar 2017	**Microsoft Research Scholarship** covering PhD tuition fees and maintenance
Oct 2014–Sep 2015	**Toshiba Research Europe Studentship** covering PhD tuition fees
Jan 2014–Sep 2014	**Christ's College Graduate Bursary** covering PhD tuition fees
Oct 2011–Nov 2012	**EPSRC Studentship** covering CPGS tuition fees and maintenance

Awards

Jul 2017	Awardee of **IEEE CVPR 2017 Doctoral Consortium**
Jul 2011	**Homerton College David Thompson Award** for outstanding exam results
Jul 2008	**Homerton College David Thompson Award** for outstanding exam results
Jun 2007	**Silver medal** at the *British Physics Olympiad*
Jun 2007	**Bronze medal** at the *British Chemistry Olympiad*

Computer Skills

Research	MATLAB, C++
Web	HTML, jQuery, PHP
Basic	Java, VB, Python

Voluntary experience

May 2012–Mar 2013	**President** of the *Cambridge University Korean Society*
Oct 2009–Jan 2011	**Outreach volunteer** at the *Cambridge University Engineering Department*
July 2006–Aug 2006	**English teacher** at *Rawlings Institute, Cambodia*

Contacts for references

- Dr Andrew Fitzgibbon (awf@microsoft.com)
  Partner Scientist, Microsoft
- Dr Christopher Zach (christopher.m.zach@gmail.com)
  Principal Research Scientist, Toshiba Research Europe
- Prof. Roberto Cipolla (rc10001@cam.ac.uk)
  Professor of Information Engineering, University of Cambridge