

Gary Pui-Tung CHOI

John A. Paulson School of Engineering and Applied Sciences, Harvard University

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Education

Harvard University

Ph.D. in Applied Mathematics

USA
2016–Present

- Advisors: Prof. L. Mahadevan, Prof. Chris Rycroft

The Chinese University of Hong Kong

M.Phil. in Mathematics

Hong Kong
2014–2016

- Advisor: Prof. Ronald Lok Ming Lui
- Thesis: Surface Conformal/Quasi-conformal Parameterization with Applications

The Chinese University of Hong Kong

B.Sc. in Mathematics, First Class Honors

Hong Kong
2010–2014

- Streams: Enrichment Stream in Mathematics, Computational and Applied Mathematics Stream
- Minors: Computer Science, Earth System Science

Research Interest

Computational Differential Geometry, Geometric Morphometrics, Mathematical Modelling, Medical Imaging, Scientific Computing, Geometry Processing, with applications to Physics, Biology, Engineering and Medicine

Publications and Preprints

Submitted/In preparation.....

- [2] GPT Choi*, CH Rycroft, *Density-equalizing maps for simply-connected open surfaces*. Submitted. Preprint, arXiv:1704.02525. (*: Corresponding author)
- [1] CP Yung, GPT Choi, K Chen, LM Lui, *Efficient feature-based image registration by mapping sparsified surfaces*. Submitted. Preprint, arXiv:1605.06215.

Published/Accepted.....

- [7] GPT Choi, Y Chen, LM Lui, B Chiu, *Conformal mapping of carotid vessel wall and plaque thickness measured from three-dimensional ultrasound images*. **Medical & Biological Engineering & Computing**, 2017. (Online First: doi:10.1007/s11517-017-1656-4)
- [6] GPT Choi, MHY Man, LM Lui, *Fast spherical quasiconformal parameterization of genus-0 closed surfaces with application to adaptive remeshing*. Accepted for publication in **Geometry, Imaging and Computing**.
- [5] GPT Choi, LM Lui, *A linear formulation for disk conformal parameterization of simply-connected open surfaces*. **Advances in Computational Mathematics**, 2017. (Online First: doi:10.1007/s10444-017-9536-x)
- [4] TW Meng, GPT Choi, LM Lui, *TEMPO: Feature-endowed Teichmüller extremal mappings of point clouds*. **SIAM Journal on Imaging Sciences**, vol. 9, no. 4, pp. 1922–1962, 2016.
- [3] GPT Choi, KT Ho, LM Lui, *Spherical conformal parameterization of genus-0 point clouds for meshing*. **SIAM Journal on Imaging Sciences**, vol. 9, no. 4, pp. 1582–1618, 2016.
- [2] PT Choi, LM Lui, *Fast disk conformal parameterization of simply-connected open surfaces*. **Journal of Scientific Computing**, vol. 65, no. 3, pp. 1065–1090, 2015.
- [1] PT Choi, KC Lam, LM Lui, *FLASH: Fast landmark aligned spherical harmonic parameterization for genus-0 closed brain surfaces*. **SIAM Journal on Imaging Sciences**, vol. 8, no. 1, pp. 67–94, 2015.

Selected Awards

- Croucher Foundation.....
- Croucher Foundation Scholarship 2016–2019
Awarded to the best Hong Kong students for doctoral study in science, medicine or technology, with full tuition, stipend and travel support.
- Hong Kong Special Administrative Region Government.....
- Hong Kong Scholarship for Excellence 2016
Awarded to the best Hong Kong students for overseas study, with the prestigious title of Hong Kong Scholar.
 - Talent Development Scholarship 2013
Awarded to outstanding students in Hong Kong who have demonstrated talent or potential in innovation, science and technology.
- Harvard University.....
- Harvard SEAS Fellowship 2016–Present
- The Chinese University of Hong Kong.....
- Mr. Ch'ien Mu Postgraduate Scholarship 2016
 - Best Teaching Assistant Award 2014–2015
 - Postgraduate Studentship 2014–2016
 - Undergraduate Mathematics Scholarship 2014
 - Student Development Scholarship for Mathematics Undergraduates 2014
 - Undergraduate Research Award 2014
 - Undergraduate Research Award 2013
 - Dr. Chao Yong Chi-hsing Mathematics Scholarship 2012
 - Dr. Daisy Li Mathematics Award 2011

Presentations

14. Student Seminar, October 19, 2017, Harvard University, USA.
Title: *Programming shape using kirigami tessellations.*
13. Workshop on Applications-Driven Geometric Functional Data Analysis, October 8–11, 2017, Florida State University, USA.
Title: *Planar morphometrics via Teichmüller mappings.*
12. The Materials Research Science and Engineering Center (MRSEC) Interdisciplinary Research Group 2 Meeting, October 4, 2017, Harvard University, USA.
Title: *Programming shape using kirigami tessellations.*
11. The Third International Conference on Engineering and Computational Mathematics (ECM2017), May 31 – June 2, 2017, Hong Kong.
Title: *Planar morphometrics via Teichmüller mappings.*
10. Numerics Journal Club, April 27, 2017, Harvard University, USA.
Title: *Surface parameterization and density-equalizing maps.*
9. Numerics Journal Club, February 16, 2017, Harvard University, USA.
Title: *Geometric problems in physics and biology.*
8. The Applied Math Lab Seminar, February 15, 2017, Harvard University, USA.
Title: *Planar morphometrics via Teichmüller mappings.*
7. (Invited talk) Croucher Symposium 2016, December 8, 2016, Hong Kong.
Title: *Geometric problems in biology.*
6. International Conference on Applied Mathematics (ICAM) 2016, May 30 – June 2, 2016, Hong Kong.
Title: *Spherical conformal parameterization of genus-0 point clouds for meshing.*
5. (Invited talk) The Hong Kong Mathematical Society Annual General Meeting 2016, May 21, 2016, Hong Kong.
Title: *Spherical conformal parameterization of genus-0 point clouds for meshing.*

4. (Invited talk) The Hong Kong Mathematical Society Annual General Meeting 2015, May 23, 2015, Hong Kong.
Title: *Fast Disk conformal parameterization of simply-connected open surfaces.*
3. International Conference on Applied Mathematics (ICAM) 2014, December 1–5, 2014, Hong Kong.
Title: *FLASH: Fast landmark aligned spherical harmonic parameterization for genus-0 closed brain surfaces.*
2. 2014 Imaging Science Camp, October 31 – November 2, 2014, Guangzhou, China.
Title: *FLASH: Fast landmark aligned spherical harmonic parameterization for genus-0 closed brain surfaces.*
1. SIAM Conference on Imaging Science (SIAM-IS14), May 12–14, 2014, Hong Kong.
Title: *Fast optimized harmonic registration of genus-0 closed surfaces with landmark constraints.*

Professional Service

Journal Reviewer

2015–Present

- Mathematical Reviews
- Geometry, Imaging and Computing
- Current Medical Imaging Reviews

Teaching Experience

John A. Paulson School of Engineering and Applied Sciences, Harvard University.....

Teaching Fellow

2017–Present

- AM205 Advanced Scientific Computing: Numerical Methods. Fall 2017.

Department of Mathematics, The Chinese University of Hong Kong.....

Teaching Assistant

2014–2016

- MATH3220 Operations Research and Logistics (Tutorial). Spring 2016.
- MATH3080 Number Theory (Tutorial). Fall 2015.
- MATH3220 Operations Research and Logistics (Tutorial). Spring 2015. (with 2014–15 Best Teaching Assistant Award)
- MATH3080 Number Theory (Tutorial). Fall 2014. (with 2014–15 Best Teaching Assistant Award)

EPYMT Teaching Assistant Leader*

2012–2015

*The EPYMT is an enrichment programme for high school mathematics talents.

- SAYT1134 Towards Differential Geometry (Tutorial). Summer 2015.
- SAYT1134 Towards Differential Geometry (Tutorial). Summer 2014.
- SAYT1114 Number Theory and Cryptography (Tutorial). Summer 2012.

EPYMT Assistant Mentor

2011–2013

- CUSA0114 Enrichment Mentoring Mathematics II (Discussion Group). Nov 2012 – Jul 2013.
- CUSA0104 Enrichment Mentoring Mathematics I (Discussion Group). Oct 2012 – Jul 2013.
- CUSA0114 Enrichment Mentoring Mathematics II (Discussion Group). Oct 2011 – Jun 2012.

EPYMT Teaching Assistant

2011–2012

- SAYT1134 Towards Differential Geometry (Tutorial). Summer 2012.
- SAYT1154 Mathematical Analysis: An Overture I (Tutorial). Spring 2012.
- SAYT1114 Number Theory and Cryptography (Tutorial). Summer 2011.
- CUSA1014 Geometric Perspectives of Complex Numbers (Tutorial). Summer 2011.

Community Outreach

Hang Lung As One.....

- Hang Lung Fun Math Tutorial Class Volunteer 2016
Offered one-to-one free mathematics tutorial services to underprivileged primary students and organized mathematics-related games to arouse students' interest in mathematics.
- Mathematics Teacher Volunteer 2015
Provided weekly mathematics tutoring service to primary students from low-income families.

Computer Skills

MATLAB, C/C++, Mathematica, Python, Java, \LaTeX , Linux, MS Office

Personal Information

- Address: 29 Oxford Street, Pierce Hall 405, Cambridge, MA 02138, USA
- Languages: English (Fluent), Cantonese Chinese (Native), Mandarin Chinese (Fluent), Japanese (Basic)

Last updated: October 4, 2017