CURRICULUM VITAE
Ronald Lok Ming LUI

PERSONAL DATA

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EDUCATION

- **PhD** in Applied Mathematics, University of California at Los Angeles (UCLA), 2003-2008
  (Supervisor: Professor Tony Fan-Cheong CHAN)

- **MA** in Mathematics, University of California at Los Angeles (UCLA), 2003-2005

- **B. Sc.** in Pure Mathematics, Hong Kong University of Science and Technology, 2000-2003

PROFESSIONAL EXPERIENCE

- **Professor**, Department of Mathematics, New Asia College, The Chinese University of Hong Kong, 08/2020 – Now

- **Associate Professor**, Department of Mathematics, New Asia College, The Chinese University of Hong Kong, 08/2016 – 07/2020

- **Assistant Professor**, Department of Mathematics, New Asia College, The Chinese University of Hong Kong, 08/2010 – 07/2016

- **Postdoctoral Scholar,** Department of Mathematics, Harvard University, 08/2008 – 08/2010
  (Mentor: Prof. Shing-Tung Yau)

- **Visiting Researcher**, Microsoft Research Asia, Beijing, 06/2007- 09/2007
  Research Mentor for the RIPS@Beijing Program. Mentoring two research projects:
  1. Hyperbolic Desktop; 2. Link Analysis of Google Page Rank.

- **Research Assistant**, Department of Mathematics, University of California at Los Angeles, 01/2005-06/2008.
  Working with Prof. Tony Chan on:
  Brain Conformal Parametrization, Automatics sulcal landmarks tracking, PDEs/Variational Problem solving on Brain surfaces, Shape based Landmark matching differeomorphism, Landmark matching differeomorphism with the algebraic functions, Computational Differential Geometry.

- **Teaching Assistant**, Department of Mathematics, University of California at Los Angeles, 09/2003-12/2004.
  Taught: Multivariable Calculus, Linear Algebra, Complex Analysis and Differential Geometry.

- **President and Cofounder**, UCLA Student Chapter of Society of Industrial and Applied Mathematics (SIAM), 09/2006-09/2007.

AWARDS AND HONORS

International award

- ***Morningside Medal of Mathematics*** (Silver), International Congress of Chinese Mathematicians, 8/2016
  [The Morningside Medal of Mathematics is awarded (once every 3 years) to exceptional mathematicians under the age of 45 for their seminal achievements in pure and applied mathematics.]

Recognition from professional (mathematics) community
- **Young Scholar Award**, Hong Kong Mathematical Society, 05/2018
- ***Distinguished Paper Award 2017,*** International Consortium of Chinese Mathematicians, 12/2017

Other awards and honors

- ***Vice Chancellor's Exemplary Teaching Award***, The Chinese University of Hong Kong, 2019
- ***Faculty Exemplary Teaching Award***, The Chinese University of Hong Kong, 2/2015
- ***New World Mathematics Award*** (Silver award for PhD thesis), 12/2010
- ***Phi Tau Phi Scholarship***, 4/2007
- ***Charles E. and Sue K. Young Outstanding Graduate Student Award***, UCLA College Award, 3/2007
- ***Outstanding Leadership Award by Society of Industrial and Applied Mathematics*** 3/2007
- ***Research Assistantship***, UCLA, 1/2005 - 6/2008
- ***Teaching Assistantship***, UCLA, 9/2003-12/2004
- ***California Non-resident tuition Fellowship***, UCLA, 9/2003 6/2008
- ***Academic Achievement Medal***, Hong Kong University of Science and Technology, 6/2003
- ***Dean's list Award***, Hong Kong University of Science and Technology (all semesters during the 3 years undergraduate study)
- ***Sir Edward Youde Scholarship*** 2002
- ***Heng Seng Bank Scholarship*** 2002
- ***Heung Tao Summer Research Scholarship*** 2002
- ***Heung Tao Student Exchange Program Scholarship*** 2002 (Exchanged to: University of California, Berkeley)

MAIN RESEARCH INTERESTS

- Computational conformal/quasi-conformal/differential geometry;
- Medical imaging;
- Mathematical geometry processing;
- Scientific computing;
- Computer vision.

LIST OF RESEARCH OUTPUTS OR CREATIVE WORKS

Submitted papers:

1. (with C.Y. Siu, H.L. Chan) Image segmentation with partial convexity prior using discrete conformality structures, under revision
2. (with G.P.T. Choi, Q. Di) Shape analysis via inconsistent surface registration, submitted
3. (with H.L. Chan, Y. Luo, L. Shi) QC-SPHRAM: Quasi-conformal Spherical Harmonics Based Geometric Distortions on Hippocampal Surfaces for Early Detection of the Alzheimer's Disease, submitted

4.   (with H.L. Chan, H.M. Yuen, C.T. Au, C.C. Chan, A.M. Li) Classification of the Obstructive Sleep Apnea based on X-ray images analysis by Quasi-conformal Geometry, submitted (with D. Syl, K.C. Lam) Computing Quasiconformal Folds, accepted in ***SIAM Journal on Imaging Sciences*** (2019)

Published papers

5.   (with Q. Di) Inconsistent Surface Registration via Optimization of Mapping Distortions, accepted, Journal of Scientific Computing (2020)
6.   (with P.T. Choi, Y.L Liu, X.F. Gu) Parallelizable global conformal parameterization of simply-connected surfaces via partial welding, accepted, SIAM Journal on Imaging Sciences (2020)
7.   (with W.H. Chak, C.P. Lau) Subsampled Turbulence Removal Network, accepted, Journal on Mathematics, Computation and Geometry of Data (2020)
8.   (with H.L. Chan, T.C. Yam) ACC-REG: Automatic Characteristic-Calibrated Registration using Eigen-Graph applied to disease classciation, accepted, Pattern Recognition (2020)
9.   (with P.T. Choi, H.L. Chan, R. Yong, K. Chen, A. Brook, G. Townsend) Tooth morphometry using quasi-conformal theory, accepted, Pattern Recognition (2020)
10.   (with N. Lei, K. Su, C. Li, S. Zhao, S. Chen; X.F. Gu) Comparison Between Variational Optimal Mass Transportation and Lie Advection, accepted, Journal on Mathematics, Computation, Geometry of Data (2020)
11.   (with K. Chen and J. Modersitzki) Image and Surface Registration, Processing, Analyzing and Learning of Images, Shapes, and Forms, Handbook of Numerical Analysis, 20, 579-611 (2019)
12.   (with D. Syl, K.C. Lam) Computing Quasiconformal Folds, SIAM Journal on Imaging Sciences, 12(3), 1392–1424 (2019)
13.   (with C.P. Lau, Y.H. Lai) Restoration of Atmospheric Turbulence-distorted Images via RPCA and Quasiconformal Maps, Journal of Inverse Problems, 35(7), 1-33 (2019)
14.   (with C.P. Lau, Y.H. Lai) Variational models for joint subsampling and reconstruction of turbulence-degraded images, Journal of Scientific Computing, https://doi.org/10.1007/s10915-018-0833-4 (2018)
15.   (with C.P. Lau, C.P. Yung) Image retargeting via Beltrami representation, IEEE Transaction on Image Processing, 27(12), 5787-5801 (2018)
16.   (with C.P. Yung, P.T. Choi, K. Chen) Efficient Feature-based Image Registration by Mapping Sparsified Surfaces, Journal of Visual Communication and Image Representation, 55, 561-571 (2018)
17.   (with T.W. Meng) PCBC: Quasiconformality of Point Cloud Mappings, Journal of Scientific Computing, 77(1), 597-633 (2018)
18.   (with H.L. Chan, Y. Shi, X.C. Tai) Topology Preserving Image Segmentation by Beltrami Signature of Images, Journal of Mathematical Imaging and Vision, 60(3), 401-421 (2018)
19.   (with K.C. Lam) Optimized Conformal Parameterization with Controllable Area Distortions, Communications in Mathematical Sciecnes, 15(7), 2027-2054 (2017)
20.   (with P.T. Choi, Y. Chen, B. Chiu) Conformal mapping of carotid vessel wall and plaque thickness measured from three-dimensional ultrasound images, Journal of Medical and Biological Engineering and Computing, 55(12), 2183-2195 (2017)
21.   (with C.P. Choi, X.F. Gu) Subdivision Connectivity Remeshing via Teichmuller extremal map, Journal of Inverse Problems and Imaging, 11(5), 825-855 (2017)
22.   (with P.T. Choi) A Linear Algorithm for Disk Conformal Parameterization of Simply-Connected Open Surface, Advances in Computational Mathematics, 44(1), 87–114 (2017)
23.   (with T.C. Ng, K.C. Lam) Multi-scale Representation of Deformations via Wavelet Transform on Beltrami coefficients, SIAM Journal on Multiscale Modeling and Simulation, 15(2), 864–891 (2017)
24.   (with T.W. Meng, P.T. Choi) TEMPO: Feature-Endowed Teichmuller Extremal Mappings of Point Clouds, SIAM Journal on Imaging Sciences, 9(4), 1922–1962 (2016)
25.   (with P.T. Choi, K.T. Ho) Spherical Conformal Parameterization of Genus-0 Point Clouds for Meshing, SIAM Journal on Imaging Sciences, 9(4), 1582–1618 (2016)

26. (with H.L. Chan, H.F. Li) Quasi-conformal Statistical Shape Analysis of Hippocampal Surfaces for Alzheimer Disease Analysis, Journal of Neurocomputing, 175(A), 177–187 (2016)

27. (with Y.T. Lee, K.C. Lam) Large deformation registration via n-dimensional quasi-conformal maps, Journal of Scientific Computing, 67(3), 926–954 (2016)

28. (with K.T. Ho) QCMC: Quasi-conformal Parameterization for Multiply-connected domains, Advances in Computational Mathematics, 42(2), 279–312 (2016)

29. (with P.T. Choi, H.Y. Man) Fast Spherical Quasiconformal Parameterization of Genus-0 Closed Surfaces with Application to Adaptive Remeshing, accepted, Journal of Geometry, Imaging and Computing (2016)

30. (with K.C. Lam) Quasi-Conformal Hybrid Multi-modality Image Registration and Its Application to Medical Image Fusion, Advances in Visual Computing, 9474, 809-818 (2015)

31. (with K.C. Lam, X.F. Gu) Landmark Constrained Genus-one Surface Teichmuller Map Applied to Surface Registration in Medical Imaging, Medical Image Analysis, 25(1), 45-55 (2015)

32. (with C.F. Wen, D.F. Wang, L. Shi, W.C.W. Chu, J.C.Y. Cheng) Landmark Constrained Registration of High-genus Surfaces Applied to Vestibular System Morphometry, Computerized Medical Imaging and Graphics, Vol. 44, 1-12 (2015)

33. (with P.T. Choi) Fast Disk Conformal Parameterization for Simply-connected Open Surfaces, Journal of Scientific Computing, 65(3), 1065-1090 (2015)

34. (with P.T. Choi, K.C. Lam) FLASH: Fast Landmark Aligned Spherical Harmonic Parameterization for Genus-0 Closed Brain Surfaces, SIAM Journal on Imaging Sciences, 8(1), 67-94 (2015)

35. (with T.C. Ng) A Splitting method for diffeomorphism optimization problem using Beltrami coefficients, Journal of Scientific Computing, 63(2), 573-611 (2015)

36. (with H.L Chan, H.Y. Hung) Hooke's Optimization for 3D Triangular Mesh, Journal of Geometry, Imaging and Computing, 2(2) (2015)

37. (with X.F. Gu, S.T. Yau) Convergence analysis of an iterative algorithm for Teichmuller maps via harmonic energy optimization, Mathematics of Computation, 84, 2823-2842 (2015)

38. (with K.C. Lam) Landmark and intensity based registration with large deformations via quasi-conformal maps, SIAM Journal on Imaging Sciences, 7(4), 2364-2392 (2014)

39. (with H.L. Chan) Detection of n-dimensional deformities using n-dimensional quasi-conformal maps, Journal of Geometry, Imaging and Computing, 1(4) (2014)

40. (with K.C. Lam, C.F. Wen) Conformal-based Surface Morphing and Multi-scale representation, Axioms (SI: Discrete Differential Geometry and its Applications to Imaging and Graphics), Vol. 2, 222-243; (2014)

41. (with K.C. Lam, X.F. Gu) Genus-One Surface Registration via Teichmuller Extremal Mapping, Medical Image Computing and Computer Machine Intelligence(MICCAI), Volume 8675, 25-32 (2014)

42. (with W. Zeng, X.F. Gu) Surface Registration by Optimization in Constrained Diffeomorphism Space, Computer Visions and Pattern Recognition(CVPR), 4169-4176 (2014)

43. (with X.F. Gu, W. Zeng, S.T. Yau) Beltrami representation for diffeomorphisms and its Applications, accepted, AMS/IP Studies in Advanced Mathematics (2014)

44. (with C.F. Wen) Geometric registration of high-genus surfaces, SIAM Journal on Imaging Sciences, 7(1), 337–365 (2014)

45. (with M. Zhang, F. Li, X. Wang, Z. Wu, S.Q. Xin, L. Shi, D.F. Wang, Y. He) Automatic registration of vestibular systems with exact landmark correspondence, Graphical Models, 76(5), 532–541 (2014)

46. (with K.C. Lam, S.T. Yau, X.F. Gu) Teichmuller mapping (T-Map) and its applications to landmark matching registrations, SIAM Journal on Imaging Sciences, 7(1), 391–426 (2014)

47. (with T.C. Ng, X.F. Gu), Teichmuller extremal map of multiply-connected domains using Beltrami holomorphic flow, Journal of Scientific Computing, 60(2), 249-275 (2013)

48. (with K.C. Lam, T.W. Wong, X.F. Gu) Texture map and video compression using Beltrami representation, SIAM Journal on Imaging Sciences, Vol. 6, No. 4, 1880–1902 (2013)

49. (with R. Lai, Z. Wen, W. Yin, X.F. Gu) Folding-Free Global Conformal Mapping for Genus-0 Surfaces by Harmonic Energy Minimization, Journal of Scientific Computing, 58(3), 705-725 (2013)

50. (with W. Zeng, S.T. Yau, X.F. Gu) Shape analysis of planar multiply-connected objects using conformal welding, IEEE Transaction on Pattern Analysis and Machine Intelligence, 36(7), 1384 - 1401 (2013)

51. (with C.F. Wen, X.F. Gu) A conformal approach for surface inpainting, Journal of Inverse Problems and Imaging, 7(3), 863-884 (2013)

52. (with M. Zhang, F. Li, Y. He, L. Shi, D. Wang) Registration of Brainstem Surfaces in Adolescent Idiopathic Scoliosis Using Discrete Ricci Flow, Medical Image Computin and Computer Assisted Intervention (MICCAI), Part II, LNCS 7511, 146-154 (2012)

53. (with T.W. Wong, P.M. Thompson, T.F. Chan) Instrinic feature extraction and Hippocampal Surface Registration using Harmonic eigenmap,SIAM Journal of Imaging Sciences, Volume 5, Issue 2, 746-768 (2012)

54. (with W. Zeng, X.F. Gu, T.F. Chan, S.T. Yau) Quasiconformal Maps Using Discrete Curvature Flow,Numerische Mathematik , Volume 121, 671-703 (2012)

55. (with T.W. Wong, W. Zeng, P.M. Thompson, T.F. Chan, S.T. Yau) A Survey on Recent Development in Computational Quasi-conformal Geometry and its Applications, AMS/IP Studies in Advanced Mathematics, Volume 51 , 697-717 (2012)

56. (with X.F. Gu, W. Zeng, F. Luo, S.T. Yau) Recent Development of Computational Conformal Geometry, AMS/IP Studies in Advanced Mathematics, Volume 51 , 515-560 (2012)

57. (with T.W. Wong, W. Zeng, X.F. Gu, P.M. Thompson, T.F. Chan, S.T. Yau) Optimization of Surface Registrations using Beltrami Holomorphic Flow, Journal of Scientific Computing, 50(3), 557-585 (2012)

58. (with T.W. Wong, X.F. Gu, T.F. Chan) Parallelizable Inpainting and Refinement of Diffeomorphisms using Beltrami Holomorphic Flow, in press, Proceedings of the International Conference of Computer Visions (ICCV) (2011)

59. (with S. Xin, Y. He, P. Fu, L. Shi, D. Wang, W.C.W. Chu, J.C.K. Cheng, X.F. Gu) Euclidean Geodesic Loops on High-genus Surfaces Applied to the Morphometry of Vestibular Systems, Medical Image Computin and Computer Assisted Intervention (MICCAI), 384-392 (2011)

60. (with W. Yang, J.H. Gao, T.F. Chan, S.T. Yau) R.A. Sperlinge and X. Huang, Independent component analysis-based classification of Alzheimer's MRI data, Journal of Alzheimer's Disease (JAD), Volume 24, Number 4, 615-637 (2011)

61. (with W. Zeng, X.F. Gu, T.F. Chan, S.T. Yau) Shape Analysis of Planar Objects with Arbitrary Topologies using Conformal Geometry, Proceedings of the 11th European conference on Computer vision, 672-686 (2010)

62. (with T.W. Wong, X.F. Gu, P.M. Thompson, T.F. Chan, S.T. Yau) Hippocampal Shape Registration using Beltrami Holomorphic flow, Medical Image Computing and Computer Assisted Intervention(MICCAI), Part II, LNCS 6362, 323-330 (2010)

63. (with W. Zeng, L. Shi, D. Wang, W.C.W. Chu, J.C.K. Cheng, X.F. Gu, S.T. Yau) Shape Analysis of Vestibular Systems in Adolescent Idiopathic Scoliosis Using Geodesic Spectra, Medical Image Computing and Computer Assisted Intervention(MICCAI), Part III, LNCS 6363, 538-546 (2010)

64. (with T.W. Wong, X.F. Gu, T.F. Chan, S.T. Yau) Compression of Surface Diffeomorphism using Beltrami coefficient, IEEE Computer Vision and Pattern Recognition(CVPR), 2839-2846 (2010)

65. (with T.W. Wong, W. Zeng, X.F. Gu, P.M. Thompson, T.F. Chan, S.T. Yau) Detecting Shape Deformations using Yamabe Flow and Beltrami Coefficents, Journal of Inverse Problem and Imaging (IPI), Volume 4, Number 2, 311-333 (2010)

66. (with S. Thiruvenkadam, Y. Wang, P.M. Thompson, T.F. Chan) Optimized Conformal Surface Registration with Shape-based Landmark Matching , SIAM Journal of Imaging Sciences, Volume 3, Issue 1, 52-78 (2010)

67. (with L.M. Lui, X. Gu, T.F. Chan, S.-T. Yau) Variational Method on Riemann Surfaces using Conformal Parameterization and its Applications to Image Processing, Journal of Methods and Applications of Analysis, Volume 15, Number 4, 513-538 (2008)

68. (with W. Zeng, X. Gu , S.-T. Yau) Shape Analysis by Conformal Modules, Journal of Methods and Applications of Analysis, Volume 15, Number 4, 539-556 (2008)

69. (with Y. Wang, J. Kwan, S. T. Yau) Computation of Curvatures using Conformal Parameterization, Communications in Information and Systems, Volume 8, Number 1, 1-16 (2008)

70. (with S. Thiruvenkadam, Y. Wang, T.F. Chan, P.M. Thompson) Optimized Conformal Parameterization of Cortical Surfaces Using Shape Based Matching of Landmark Curves, Medical Image Computing and Computer Assisted Intervention(MICCAI), LNCS 5241, 494-502 (2008)

71. (with Y. Wang, T.F. Chan, and P.M. Thompson) Brain Anatomical Feature Detection by Solving Partial Differential Equations on General Manifolds, Discrete and Continuous Dynamical Systems B, 7(3), 605-618 (2007)

72. (with Y. Wang, T.F. Chan, P.M. Thompson) Landmark Constrained Genus Zero Surface Conformal Mapping and Its Application to Brain Mapping Research, Applied Numerical Mathematics 57, 847-858 (2007)

73. (with Y. Wang, X. Gu, K.M. Hayashi, T.F. Chan, P.M. Thompson, S.-T. Yau) Brain Surface Conformal Parameterization using Riemann Surface Structure, IEEE Transaction of Medical Imaging, 26(6), 853-865 (2007)

74. (with B. Gutman, Y. Wang, T.F. Chan, P.M. Thompson) Hippocampal Surface Discrimination via Invariant Descriptors of Spherical Conformal Maps, IEEE International Symposium on Biomedical Imaging - From Nano to Macro (ISBI), Washington D.C., USA, 1316-1319 (2007)

75. (with Y. Wang, T.F. Chan, P.M. Thompson) Automatic Landmark Tracking and Its Application to the Optimization of Brain Conformal Mapping, IEEE Computer Vision and Pattern Recognition(CVPR), Vol. 2, 1784-1792 (2006)

76. (with B. Gutman, Y. Wang, T. F. Chan, P.M. Thompson) Hippocampal Surface Analysis Using Spherical Harmonic Function Applied to Surface Conformal Mapping, Proceeding of 8th International Conference on Pattern Recognition (ICPR), Hong Kong, China, Vol. 3, 964-967 (2006)

77. (with Y. Wang, T.F. Chan) PDE on manifold using global conformal parametrization, Variational, Geometric, and Level Set Methods in Computer Vision: Third International Workshop, VLSM 2005, Beijing, China, 307-319 (2005)

78. (with Y. Wang, T.F. Chan, P.M. Thompson) Optimization of Brain Conformal Mapping with Landmarks, Medical Image Computing and Computer Assisted Intervention(MICCAI), Part II, 675-683 (2005)

RESEARCH GRANTS

Competitive Grants

1. **Principal Investigator**, *Data-driven mathematical models for image analysis and understanding,* **Research Grants Council - General Research Fund, 2020-01-01 to 2022-12-31, HKD 502,000.00**

2. **Principal Investigator**, *Mathematical models for deformation analysis and their applications (CU2130549),* **Research Grants Council - General Research Fund, 2018-01-01 to 2020-12-31, HKD 472,351.00**

3. **Principal Investigator**, *Variational models for registration problems of inconsistent shapes (CU130447),* **Research Grants Council - General Research Fund, 2016-01-01 to 2018-12-31, HKD 631,972.00**

4. **Principal Investigator**, *Developing metric shape space for landmark-labeled surfaces using T-Maps,* **Research Grants Council - General Research Fund, 2015-01-01 to 2017-12-31, HKD 439,150.00**

5. **Principal Investigator**, *New Geometric Approaches for Image registration, Video Compression and Video Super-resolution (CU13024),* **Research Grants Council - General Research Fund, 2014-01-01 to 2016-12-31, HKD 592,987.00**

6. **Principal Investigator**, *Riemannian Metric-based Approaches for 3D Mesh Editing and Fast Shape Matching (CU12046),* **Research Grants Council - Early Career Scheme, 2013-01-01 to 2016-12-31, HKD 760,666.00 (plus ECS Grant / Award, HKD 50,000.00)**

7. **Principal Investigator**, *Shape Analysis Using Computational Quasi-conformal Geometry (CU11018),* **Research Grants Council - General Research Fund, 2012-01-01 to 2014-12-31, HKD 650,000.00**

8. **Co-Investigator**, *Detection and Grading of Cam-type Femoroacetabular Impingement (FAI) from Radiological Signs Using Computerized Methods (CU12730)*, **Research Grants Council - General Research Fund, 2013-01-01 to 2015-12-31, HKD 695,460.00**
9. **Co-Investigator,** *Establishing the Medical Imaging Research Center (MD12645)*, **CUHK Shenzhen Research Institute - SZRI Start-up Support Scheme, 2012-07-01 to 2014-06-30, HKD 250,000.00**
10. **Co-Investigator,** *Mathematical Imaging and Applications (PS11597)*, **Focused Innovations Scheme (formerly known as Focused Investments Scheme) - Scheme B, 2012-05-01 to 2014-12-31, HKD 700,000.00**
11. **Co-Investigator**, *On the Generation and Applications of Multi-modal Statistical Chinese Brain Templates (MS-CBT) and Atlases (MS-CBA) (CU11757)*, **Research Grants Council - General Research Fund, 2012-01-01 to 2014-12-31, HKD 941,000.00**

Non-Competitive Grants

1. **Principal Investigator**, *Variational models for prior based image segmentation (4053339)*, **CUHK Research Committee Funding (Direct Grants), 2018-07-01 to 2019-06-30, HKD 66,322.00**
2. **Principal Investigator**, *Mathematical models for deformation analysis and their applications (4053292)*, **CUHK Research Committee Funding (Direct Grants), 2018-01-01 to 2018-12-31, HKD 29,334.00**
3. **Principal Investigator**, *2D/3D Imaging with shape prior using conformal welding (4053217)*, **CUHK Research Committee Funding (Direct Grants), 2017-01-01 to 2017-12-31, HKD 40,000.00**
4. **Principal Investigator**, *A Novel Statistical Shape Models for Alzheimer's Disease Analysis (PS14318)*, **CUHK Research Committee Funding (Direct Grants), 2015-02-01 to 2016-01-31, HKD 39,027.00**
5. **Principal Investigator**, *Geometric Processing Using Differential Geometry (PS10880)*, **CUHK Research Committee Funding (Direct Grants), 2011-02-01 to 2012-01-31, HKD 100,000.00**

ROFESSIONAL SOCIETIES

- Member, Hong Kong Mathematical Society (HKMS), 08/2010-Now

EDITORSHIP

Journal Editorship:
Managing editor, Journal of Geometry, Imaging and Computing (GIC), 06/2013- Now

INVITED PRESENTATIONS/ LECTURES

Invited Presentations/ Lectures at Conferences, Workshops, Research Institutes and Universities (Total: 50)

1. *"Image Segmentation with Geometric Priors using discrete conformality structures",* The Fourth International Workshop on Image Processing Techniques and Applications, Liverpool, United Kingdom, 22/07/2019 – 23/07/2019
2. *"Computing Quasiconformal Folds",* International Workshop on Recent Advances on Mathematical Imaging and Data Science, Shanghai, China, 02/07/2019 – 06/07/2019
3. *"Computing Quasiconformal Folds",* The 8th International Congress of Chinese Mathematicians, Beijing, China, 09/06/2019 - 14/06/2019
4. *"Computing Quasiconformal Folds"*, IPAM Workshop: Geometric Processing, UCLA, Los Angeles, U.S.A., 01/04/2019 – 05/04/2019
5. *"Mathematical Models for Restoration of Turbulence-distorted Images"*, International Workshop on Image Processing and Inverse Problems, Beijing, China, 21/04/2018-24/04/2018

6. *"Tooth morphometry using quasi-conformal theory"*, Seminar at Liverpool Centre for Mathematics in Healthcare, University of Liverpool, 04/02/2019

7. *"Computing Quasiconformal Folds"*, Sanya workshop on Efficient Operator Splitting Techniques for Complex System and Large Scale Data Analysis, Sanya, China, 14/01/2019-18/01/2019

8. *"Mathematical Models for Restoration of Turbulence-distorted Images"*, Italian-CUHK Workshop on Image Science and Optimization, Hong Kong, 11/01/2019

9. *"Recent advances of Computational Quasiconformal Geometry in Imaging, Graphics and Visions"*, 6th ICCM CAM Conference on Geometry and Imaging, 15/12/2017-17/12/2017

10. *"Recent advances of Computational Quasiconformal Geometry"*, Workshop on Flows, mappings and shapes, Cambridge, UK, 12/2017

11. *"TEMPO: Feature-endowed Teichmuller extremal mappings of point cloud for geometry processing and shape classification"*, 15th Annual Meeting of the China Society for Industrial and Applied Mathematics (*CSIAM 2017*, Qingdao, China, 13/10/2017-15/10/2017

12. *"Multiscale representation of deformation via Beltrami coefficients"*, Workshop on Frame Theory and Sparse Representation for Complex Data, Institute for Mathematical Sciences, National University of Singapore, 29/5/2017 – 2/6/2017

13. *"Recent advances of Computational Quasiconformal Geometry in Imaging, Graphics and Visions"*, The 7th International Congress of Chinese Mathematicians (ICCM 2016), Beijing 08/2016

14. *"TEMPO: Feature-endowed Teichmüller. Extremal Mappings of Point Clouds"*, International Conference on Imaging, Vision and Learning based on Optimization and PDEs, Bergen, Norway, 08/2016

15. *"High-genus Surface Registration and Its Applications to Medical Imaging"*, The 8th International Congress on Industrial and Applied Mathematics : Mini-Symposium on Geometric Understanding of Data in 3D and Higher, Beijing, 10/08/2015-14/08/2015

16. *"Landmark and Intensity-based Registration with Large Deformation via Quasiconformal Maps"*, The 8th International Congress on Industrial and Applied Mathematics : Mini-Symposium on Regularization methods for biomedical image analysis on manifolds, Beijing, 10/08/2015-14/08-2015

17. *"Shape Analysis via Extremal Teichmuller Maps"*, The 8th International Congress on Industrial and Applied Mathematics : Mini-Symposium on Theoretical and Computational Aspects of Geometric Shape Analysis, Beijing, 10/08/2015-14/08-2015

18. *"Medical Morphometry using Quasiconformal Teichmuller Theory"*, Seminar at University of Padua, Italy, 10/7/2015

19. *"Medical Image Analysis via Quasi-conformal Geometry"*, The Third International Workshop on Image Processing Techniques and Application, Liverpool, United Kingdom, 6/7/2015-8/7/2015

20. *"Quasi-conformal registration for multi-modality image reconstruction"*, 2015 Conference Applied Inverse Problems: Mini-Symposium on Inverse Problems in Optics, Helsinki, Finland, 25/5/2015-29/5/2015

21. *"Signature of multiply-connected shapes using conformal welding"*, Workshop on differential geometry, geometric invariants and vision theory, University of Bergen, Norway, 23/4/2015-25/4/2015

22. *"Constrained and geometric registration of high-genus surfaces"*, Hong Kong-Tokyo Workshop on Scientific Computing, Tokyo, 6/4/2015 & 8/4/2015

23. *"High-genus surface registration and its applications to medical imaging"*, Workshop on New Trends in Optimization for Imaging, Sanya, China, 19/1/2015-23/1/2015

24. *"Quasiconformal-based registration models for large deformations"*, The Korean Society for Industrial and Applied Mathematics Annual meeting 2014, Seoul, South Korea, 20/11/2014-23/11/2014

25. "Geometry, Imaging and Computing" in SIAM Conference on Imaging Sciences: Mini-Symposium on Geometry, Imaging and Computing, Hong Kong, 12/5/2014-14/5/2014

26. *"Computational Conformal/Quasi-conformal geometry and applications"*, Seminar at Brown University, United States, 7/5/2013

27. *"Extremal Teichmuller map and its applications"*, Applied Mathematics Seminar at University of California at Irvine, United States, 7/2/2013

28. "*Medical Morphometry using Quasiconformal Teichmuller Theory*", Invited Lecture at Imaging Genetic Center, University of Southern California, United States, 3/2/2014
29. "*Hybrid Diffeomorphic Registration with Large Deformations via Quasi-conformal Maps*", The 2nd Guangzhou International Workshop on Mathematical Imaging, Guangzhou, China, 14/12/2013-15/12/2013
30. "*Diffeomorphic Registration with Large Deformations via Quasi-conformal Maps*" in The Sixth International Congress of Chinese Mathematicians, Taiwan, 14/7/2013-19/7/2013
31. "*Surface registration using extremal Teichmuller maps*", Workshop on Conformal Geometry in Mapping, Imaging and Sensing, Imperial College London, United Kingdom, 20/6/2013-21/6/2013
32. "*3D Imaging and Computer Graphics using Differential Geometry*" in Huawei-VIISA workshop on Imaging Science, Huawei, Shenzhen, China, 15/5/2013
33. "*3D imaging and computer graphics using computational differential geometry*", The 1st Chongqing Workshop on Computational and Applied Mathematics, Chongqing University, China (05/2013-06/2013)
34. "*Teichmüller Extremal Map and its Applications*", The International Workshop on Scientific Computing for Young Chinese Mathematicians, Hong Kong, 15/3/2013-17/3/2013
35. "*Teichmuller Extremal Mapping and its Applications in Imaging Science*", CAM-ICCM Workshop on Imaging Sciences (in honor of Stanley Osher), 15/12/2012-18/12/2012
36. "*Teichmuller Extremal Mapping and its Applications*", Workshop on 3D Imaging and Computing, Shing-Tung Yau Center, Taiwan, 10/12/2012-11/12/2012
37. "*Computational Quasi-conformal Geometry and its Applications*" in The 3D Geometry / Imaging Conference, Kunming, China, 7/2012-8/2012
38. "*Medical Morphometry and Computer Visions Using Quasi-Conformal Teichmuller Theory*" in SIAM Conference on Imaging Science, Philadelphia, United States, 20/5/2012-22/5/2012
39. "*Computational Quasi-conformal Geometry and applications*", The 2nd Conference of Tsignhua Sanya International Mathematics Forum, Sanya, China, 19/12/2011-21/12/2011
40. "*Medical Shape Analysis using Quasiconformal Teichmuller Theory*", 2011 International workshop on Recent Advances in Biomedical Imaging, Shanghai Jiang Tong University, Shanghai, 15/8/2011-18/8/2011
41. "*Computational Quasiconformal Geometry*", Workshop on Complex Geometry, The University of Hong Kong, Hong Kong, 2/8/2011-4/8/2011
42. "*Shape Analysis using Computational Quasi-conformal Geometry*", Analytic and Geometric Methods in Medical Imaging, Newton Institute, Cambridge University, United Kingdom, 22/8/2011-26/8/2011
43. "*Computational Quasi-conformal geometry and its Applications to Medical Morphometry*", The 5th International Congress of Chinese Mathematicians, Beijing, China, 17/12/2010-22/12/2010
44. "*Computational Quasi-Conformal Geometry and its Applications to Medical Morphometry*" in Hong Kong Geometry Colloquium, Hong Kong, 9/10/2010
45. *"Medical Morphometry using Quasiconformal Teichmuller Theory"*, International Conference on Mathematical Methods for Imaging, Guangzhou, China, 4/8/2010-6/8/2010
46. "*Human Brain Mapping using Computational QuasiconformalGeometry*", SIAM Conference on Imaging Science 2010 (IS10), Chicago, 12/4/2010-14/4/2010
47. "Conformal Parameterization and Variational Problems on Surfaces", SIAM Conference on Imaging Science 2008 (IS08), San Diego, 7/7/2008-9/7-2008
48. "*Brain Surface Conformal Parameterization with Algebraic Functions*", International Conference on Medical Image Computing and Computer Assisted Intervention 2006, 9th International Conference, Copenhagen, Denmark, 1/10/2006-6/10/2006
49. *"Automatic Landmark Tracking and Its Application to the Optimization of Brain Conformal Mapping"*, IEEE Computer Society Conference on Computer Vision and Pattern Recognition (CVPR), New York, NY, 17/6/2006-22/6/2006
50. "*Optimization of Brain Conformal Mapping with Landmarks"*, The Eighth IASTED International Conference on Computer Graphics and Imaging (CGIM), Honolulu, HI, USA, 15/8/2005-17/8/2005

CONFERENCE ORGANIZATION

1. Member of Organizing Committee, 26th International Domain Decomposition Conference, DD XXVI, 2/12/2019-6/12/2019
2. Organizer, 9th International Congress on Industrial and Applied Mathematics (ICIAM 2019) – Minisymposium on "Geometric and Learning-based models for 2D/3D Imaging and Applications", 15/07/2019-19/07/2019
3. Member of Organizing Committee, International Conference on Scientific Computing, 5/12/2018-8/12/2018
4. Chairman of Scientific Committee, 6th ICCM CAM Conference on Geometry and Imaging, 15/12/2017-17/12/2017
5. Member of Organizing Committee, Workshop on Optimization in Scientific Computing, 21/6/2017-23/6/2017
6. Member of Organizing Committee, The 1st Asia-Pacific Workshop on Image Processing and Applications, Sydney, Australia, 14/12/2015-16/12/2015
7. Chairman of Organizing Committee, The International workshop on Mathematical Geometry Processing, The Chinese University of Hong Kong, Hong Kong, 14/12/2014-16/12/2014
8. Member of Local Organizing Committee, SIAM Conference on Imaging Sciences, Hong Kong, 12/5/2014-14/5/2014
9. Member of Organizing Committee, International Workshop on Numerical Linear Algebra with Applications(in honor of the 75th birthday of Prof. Robert Plemmons), The Chinese University of Hong Kong, Hong Kong, 17/12/2013-18/11/2013
10. Member of Organizing Committee, The International Workshop on Scientific Computing for Young Chinese Mathematicians, The Chinese University of Hong Kong, Hong Kong,, 15/3/2013-17/3/2013
11. Organizer, SIAM Conference on Imaging Sciences - Minisymposium on "Mathematics of Medical Imaging and Shape Analysis", Philadelphia, United States, 20/5/2012-22/5/2012
12. Member of Organizing Committee, International Conference on Scientific Computing 2012, The Chinese University of Hong Kong, Hong Kong, 4/1/2012-7/1/2012

PROFESSIONAL SOCIETY ACTIVITIES

- **Membership Secretary**, Hong Kong Mathematical Society (HKMS), 05/2016- Now
- **General Secretary**, Hong Kong Mathematical Society (HKMS), 02/2014-05/2016

POSTGRADUATE STUDENTS (Please refer to the Teaching File for further details)

Graduated MPhil students (Total: 13)

- Supervisor, Lam Ka Chun, MPhil, Thesis title: *"Surface Registration Using Quasi-Conformal Teichmuller Theory and Its Application to Texture Mapping"*; Now: continue his PhD at CUHK
- Supervisor, Wen Chengfeng, MPhil, Thesis title: *"Geometric Porcessing Using Computational Riemannian Geometry"*; Now: continue his PhD at State University of New York at Stony Brook
- Supervisor, Tsang Manho, MPhil, Thesis title: *"Shape Morphometry Using Riemannian Geometry with Applications in Medical Imaging"*; Now: Working in a diamond inspection company
- Supervisor, Choi Chi Po, MPhil, Thesis title: *"Quasi-conformal Surface Remeshing";* Now: continue his PhD in University of California at Davis
- Supervisor, Ng, Tsz Ching, MPhil, Thesis title: *"Solving Diffeomorphism Optimization Problems via Beltrami Holomorphic Flow";* Now: continue his PhD at State University of New York at Stony Brook
- Supervisor, Ho Kin Tat, MPhil, Thesis title: *"Iterative Scheme for Quasi-conformal Parametrization of Multiply-connected Surfaces";* Now: working as research assistant at

CUHK
- Supervisor, Li Hangfan, MPhil, Thesis title: *"Quasi-conformal Based Statistical Shape Analysis";* Now: continue his PhD at Georgia Institute of Technology
- Supervisor, Meng Tingwei, MPhil, Thesis title: *"Computational Quasiconformal Theory on Point clouds";* Now: continue his PhD at Brown University
- Supervisor, Choi Pui Tung, MPhil, *"Surface Conformal/Quasi-conformal Parameterization with Applications";* Now: continue his PhD at Harvard University
- Supervisor, Yam Tsz Chun, MPhil, Thesis title: *"Efficient and Accurate Shape Matching of Hippocampal Surfaces Applied to the classification of Alzheimer's disease";* Now: working as a software programmer
- Supervisor, Lau Chun Pong, MPhi, Thesis title: "*Deformation Processing for Image Restoration and Retargeting";* Now: continue his PhD at University of Maryland
- Supervisor, Liu Leung Yusan, MPhil, Thesis title: *"A parallel algorithm for global conformal parameterization of large-scale meshes using welding maps";* Now: working as a software programmer
- Supervisor, Chan Hei Long, MPhil, Thesis title: *"Efficient and Accurate Shape Matching of Hippocampal Surfaces Applied to the classification of Alzheimer's disease";* Now: continue his PhD at CUHK

Graduated PhD Students (Total: 1)

- Supervisor, Lam Ka Chun, PhD, Thesis title: ""; Now: Von Karman Postdoctoral Instructor at California Institute of Technology (Caltech)

Current PhD Students (Total: 2)

- Supervisor, Qiu Di, PhD
- Supervisor, Chan Hei Long, PhD

Current MPhil Students (Total: 5)

- Supervisor, Siu Chun Yin, MPhil
- Supervisor, Chak Wai Ho, MPhil
- Supervisor, Law Ho, MPhil
- Supervisor, Oscar Yuchen Liu, MPhil
- Supervisor, Han Zhang, MPhil

INTERNAL SERVICE

Department
- Chairman, Research Assessment Exercise Committee for Impact Cases (2019-07-01 to Now)
- Member, Sub-Committee on Academic Equipment Grants (2019-07-01 to Now)
- Member, Undergraduate Curriculum Committee (2011-08-01 to Now)
- Member, Computing Committee (2012-08-01 to Now)
- Level II Advisor, Academic Advisor for Undergraduate Programme (2012-08 to Now)
- Level I Advisor, Academic Advisor for Undergraduate Programme (2012-08 to 2013-08-31)
- Member, Staff-Student Consultative Committee (2012-08-01 to 2013-07-31)
- Chairman, Committee on Summer Programmes (2012-08-01 to 2013-07-31)
- Member, Admission Committee & Academic Advice Committee {Department} (2011-08-01 to 2013-07-31)
- Member, Sub-committee on Service Course (2011-08-01 to 2012-07-31)
- Approval of credit transfer matters (2012-12-01 to 2015-07-31)

Faculty

- Associate Professor representative, Board of Science Faculty (2019-08-01 to 2021-08-31)
- Member, Faculty Committee on Academic Advising (2012-08-01 to 2017-07-31)

- Acting Assistant Professor representative, Board of Science Faculty (2015-01-27 to 2015-07-31)
- Member, Committee on Student Exchange Programme (2012-08-01 to 2013-07-31)

College

- New Asia College Coordinator in the Department of Mathematics (2019-07-01 to Now)
- Member, Committee on General Education of New Asia College (2014-08-01 to Now)

University

- Member, LMS Review Committee - to select the cloud-based university-wide LMS.

EXTERNAL SERVICE

- Honorable consultant for "Hong Kong Primary Mathematics Challenge" (全港小學數學挑戰賽) (1/1/2013 to Now)
- Speaker, "The 8th Lau Oi Wah Memorial Science Lecture Series" (25/02/2017)
- Speaker, "Mathematics World Lecture Series" organized by the Education Bureau of HKSAR (13/01/2017)
- Reviewer, International Consortium of Chinese Mathematicians (ICCM) Best Paper Award (05/2019)
- Speaker, Mathematics World (Public) Lecture Series [Title: Mathematics meets Medicine] (13/6/2015)
- Speaker, New Wave Mathematics Public Lecture [Title: 醫者數學心: 微分幾何與醫學影像] (25/2/2012)
- Invited Speaker, Cheung Sha Wan Catholic Secondary School [Title: How to Study Mathematics] (11/4/2011)
- Invited Speaker, Cheung Sha Wan Catholic Secondary School [Title: Mathematics and Academic Life] (24/11/2010)
- Papers Reviewer (Initial Selection), S.T. Yau High School Mathematics Award (Applied Mathematics) (9/2010)