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## Dr. Yu-Kun Lai

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### Education

- 09/2006 – 07/2008, PhD in Computer Science, Tsinghua University, Beijing, China
- 09/2003 – 07/2006, Master in Computer Science, Tsinghua University, Beijing, China
- 09/1999 – 07/2003, Bachelor in Computer Science, Tsinghua University, Beijing, China

### Academic Employment

- 08/2018 – Present, Cardiff University, Wales, UK
  - Reader, School of Computer Science and Informatics
  - Responsibilities: Teaching and Research
  - Areas of Interest: Computer Graphics, Geometry Processing, Computer Vision
- 08/2016 – 07/2018, Cardiff University, Wales, UK
  - Senior Lecturer, School of Computer Science and Informatics
- 04/2009 – 07/2016, Cardiff University, Wales, UK
  - Lecturer in Visual Computing, School of Computer Science and Informatics
- 08/2008 – 02/2009, Tsinghua University, Beijing, China
  - Research Fellow at Visual Media Research Center, Dept. of Computer Science and Technology

### Academic Visit

- 10/2007 – 04/2008, Stony Brook University, Stony Brook, NY, USA
  - Visiting Student in Computer Science Department

### Teaching Activities

- 17/18, 16/17, 15/16, 14/15, 13/14, 12/13 Spring CMT205 Object-Oriented Development with Java (shared with Prof. A. D. Marshall/M. Morgan)
- 17/18, 16/17, 15/16 Spring CM1208 Maths for Computer Science (shared with Dr H. Liu)
- 17/18, 16/17, 15/16 Spring CM2208 Scientific Computing (shared with Prof. A.D. Marshall)
- 17/18, 16/17, 15/16 Autumn CM2104 Computational Mathematics (shared with Prof. A. D. Marshall)
- 14/15, 13/14, 12/13, 11/12 Spring CM1203: Fundamentals of Computing with Java (shared with M. Morgan)
- 14/15, 13/14, 12/13, 11/12 Spring CM2202: Scientific Computing and Multimedia Applications (shared with Prof. A. D. Marshall and Dr. S. Schockaert)
- 11/12, 10/11, 09/10 Autumn & Spring CMT912: Programming (shared with Prof. R. R. Martin)
- 10/11 Autumn: CM0340: Multimedia

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- 10/11, 09/10 Spring CM0268: Data audio graphics & image signal processing with MATLAB (shared with Prof. A. D. Marshall)
  - 09/10 Spring CMT502: Data Structures and Algorithms (shared with Dr. X. Sun)

## Research Projects

- Intelligent shape editing with robust feature analysis, EPSRC, 12/2010-7/2012, PI
- Using mosaicing for finite element meshing, 10/2010-10/2013, Airbus (PhD Studentship), CoI
- Small items of research equipment at Cardiff University, EPSRC, 11/2012-3/2013, CoI
- Intrinsic Voronoi/Delaunay structure on manifold mesh and its applications in visual computing. Royal Society Newton Advanced Fellowship, 3/2016-2/2019, UK lead (with Dr Yongjin Liu from Tsinghua University, China).
- Data-driven realistic human motion reconstruction. Royal Society Newton Mobility Grant, 4/2016-3/2018, UK lead (with Dr Lin Gao from Institute of Computing, Chinese Academy of Sciences, China).
- Video scene analysis for virtual and augmented reality. Tencent, PI, 12/2017-12/2020.
- Perceptual shape optimisation for 3D printing. Royal Society. 3/2018-3/2020, PI (with Prof. Charlie Wang from TU Delft, Netherlands).
- Structural analysis of stereoscopic 360-degree video for mixed reality. Royal Society, 9/2018-8/2020, PI (with Dr Fanglue Zhang from Victoria University of Wellington, New Zealand).

## Publications

### *Journal Articles*

1. P. L. Rosin, **Y.-K. Lai**, C. Liu, G. R. Davies, D. Mills, G. Tuson, Y. Russell, "Virtual recovery of content from X-ray microtomography scans of damaged historic scrolls", *Scientific Reports*, to appear.
2. Y.-J. Liu, B.-J. Li, **Y.-K. Lai**, "Sparse MDMO: learning a discriminative feature for micro-expression recognition", *IEEE Transactions on Affective Computing*, to appear.
3. J. Yang, X. Sun, **Y.-K. Lai**, L. Zheng, M.-M. Cheng, "Recognition from Web Data: A Progressive Filtering Approach", *IEEE Transactions on Image Processing*, to appear.
4. K. Li, J. Yang, **Y.-K. Lai**, D. Guo, "Robust non-rigid registration with reweighted position and transformation sparsity", *IEEE Transactions on Visualization and Computer Graphics*, to appear.
5. E. Krumhuber, **Y.-K. Lai**, P. L. Rosin, K. Hugenberg, "When facial expressions do and do not signal minds: The role of face inversion, expression dynamism, and emotion type", *Emotion*, to appear.
6. J. Yang, L. Gao, **Y.-K. Lai**, P. L. Rosin, S. Xia, "Bi-harmonic deformation transfer with automatic key point selection", *Graphical Models*, to appear.

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7. L. Wan, Y. Xiao, N. Dou, C.-S. Leung, **Y.-K. Lai**. “Scribble-based gradient mesh recoloring”, *Multimedia Tools and Applications*, to appear.
  8. C. Liu, P. L. Rosin, **Y.-K. Lai**, W. Hu, “Robust Virtual Unrolling of Historical Parchment XMT Images”, *IEEE Transactions on Image Processing*, vol. 27(4), pp. 1914-1926, 2018.
  9. B. Li, R. Liu, J. Cao, J. Zhang, **Y.-K. Lai**, X. Liu, “Online low-rank representation learning for joint multi-subspace recovery and clustering”, *IEEE Transactions on Image Processing*, vol. 27(1), pp. 335-348, 2018.
  10. Y. Liang, F. Xu, S.-H. Zhang, **Y.-K. Lai**, T. Mu. “Knowledge graph construction with structure and parameter learning for indoor scene design”, *Computational Visual Media*, 2018.
  11. B. Li, F. Zhao, Z. Su, X. Liang, **Y.-K. Lai**, P. L. Rosin, “Example-based image colorization using locality consistent sparse representation”, *IEEE Transactions on Image Processing*, vol. 26(11), pp. 5188-5202, 2017.
  12. K. Li, J. Yang, L. Liu, R. Boulic, **Y.-K. Lai**, Y. Liu, Y. Li, E. Molla. “SPA: Sparse Photorealistic Animation Using a Single RGB-D Camera”, *IEEE Transactions on Circuits and Systems for Video Technology*, vol. 27(4), pp. 771-783, 2017.
  13. L. Gao, S.-Y. Chen, **Y.-K. Lai**, S. Xia, “Data-Driven Shape Interpolation and Morphing Editing”, *Computer Graphics Forum*, vol. 36(8), pp. 19-31, 2017.
  14. S.-Y. Chen, L. Gao, **Y.-K. Lai**, S. Xia, “Rigidity Controllable As-Rigid-As-Possible Shape Deformation”, *Graphical Models*, vol. 91, pp. 13-21, 2017.
  15. B. Yan, Z. Wang, A. L. Parker, **Y.-K. Lai**, P. J. Thomas, L. Yue, J. N. Monks. Superlensing Microscope Objective Lens, *Applied Optics*, vol. 56(11), pp. 3142-3147, 2017.
  16. S. Xia, L. Gao, **Y.-K. Lai**, M. Yuan, J. Chai. “A survey on human performance capture and animation”, *Journal of Computer Science and Technology*, vol. 32(3), 536-554, 2017.
  17. B. Li, **Y.-K. Lai**, P. L. Rosin. “Example-based image colorization via automatic feature selection and fusion”, *Neurocomputing*, vol. 266, pp. 687-698, 2017.
  18. L. Gao, **Y.-K. Lai**, D. Liang, S. Chen, S. Xia. “Efficient and Flexible Deformation Representation for Data-Driven Surface Modeling”, *ACM Transactions on Graphics*, vol. 35(5), 158:1-17, 2016.
  19. S. Lin, Y. Chen, **Y.-K. Lai**, R. R. Martin, Z.-Q. Cheng, “Fast Capture of Textured Full-Body Avatar with RGB-D Cameras”, *The Visual Computer*, vol. 32(6-8), pp. 681-691, 2016.
  20. S. Lin, **Y.-K. Lai**, R. R. Martin, S. Jin, Z.-Q. Cheng, “Color-aware surface registration”, *Computers & Graphics*, vol. 58, pp. 31-42, 2016.
  21. F. M. Anuar, R. Setchi, **Y.-K. Lai**, “Semantic retrieval of trademarks based on conceptual similarity”, *IEEE Transactions on Systems, Man, and Cybernetics: Systems*, vol. 46(2), pp. 220-233, 2016.
  22. A. Abdulmunem, **Y.-K. Lai**, X. Sun, “Saliency guided local and global descriptors for effective action recognition”, *Computational Visual Media*, vol. 2(1), pp. 97-106, 2016.
  23. K. Chen, **Y.-K. Lai**, S.-M. Hu, “3D indoor scene modeling from RGB-D data: a survey”, *Computational Visual Media*, vol. 1(4), pp. 267-278, 2015.

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24. L. Gao, Y.-P. Cao, **Y.-K. Lai**, H.-Z. Huang, L. Kobbelt, S.-M. Hu, “Active exploration of large 3D model repositories”, *IEEE Transactions on Visualization and Computer Graphics*, vol. 21(12), pp. 1390-1402, 2015.
  25. J. Yang, K. Li, K. Li, **Y.-K. Lai**, “Sparse non-rigid registration of 3D shapes”, *Computer Graphics Forum*, vol. 34(5), pp. 89-99, 2015.
  26. Y. Xiao, L. Wan, C. S. Leung, **Y.-K. Lai**, T.-T. Wong, “Optimization-based gradient mesh colour transfer”, *Computer Graphics Forum*, vol. 34(6), pp. 123-134, 2015.
  27. K. Chen, **Y.-K. Lai**, Y.-X. Wu, R. Martin, S.-M. Hu, “Automatic semantic modeling of indoor scenes from low-quality RGB-D data using contextual information”, *ACM Transactions on Graphics*, vol. 33(6), 208:1-12, 2014.
  28. M. Wang, **Y.-K. Lai**, Y. Liang, R. Martin, S.-M. Hu, “Bigger picture: data-driven image extrapolation using graph matching”, *ACM Transactions on Graphics*, vol. 33(6), 173:1-13, 2014.
  29. D. Mills, A. Curtis, G. Davis, P. Rosin, **Y.-K. Lai**, “Apocalypto: revealing the Bressingham roll”, *Journal of Paper Conservation*, vol. 15(3), pp. 14-19, 2014.
  30. **Y.-K. Lai**, P. L. Rosin. “Efficient circular thresholding”, *IEEE Transactions on Image Processing*, vol. 23(3), pp. 992—1001, 2014.
  31. G. K. L. Tam, R. R. Martin, P. L. Rosin, **Y.-K. Lai**. “Diffusion pruning for rapidly and robustly selecting global correspondences using local isometry”, *ACM Transactions on Graphics*, vol. 33(1), Article No. 4, pp. 1-17, 2014.
  32. G. K. L. Tam, R. R. Martin, P. L. Rosin, **Y.-K. Lai**. “An efficient approach to correspondences between multiple non-rigid parts”, *Computer Graphics Forum*, vol. 33(5), pp. 137-146, 2014.
  33. **Y.-K. Lai**, P. L. Rosin. “Artistic rendering enhancing global structures”. *The Visual Computer*, vol. 30(10), pp. 1179-1193, 2014.
  34. S.-S. Huang, G.-X. Zhang, **Y.-K. Lai**, J. Kopf, D. Cohen-Or, S.-M. Hu. “Parametric meta-filter modeling from a single example pair”, *The Visual Computer*, vol. 30(6-8), pp. 673-684, 2014.
  35. O. Samko, **Y.-K. Lai**, A. D. Marshall, P. L. Rosin. “Virtual unrolling and information recovery from scanned historical documents”, *Pattern Recognition*, vol. 47(1), pp. 248-259, 2014.
  36. J. Wu, R. R. Martin, P. L. Rosin, X. Sun, **Y.-K. Lai**, Y. Liu, C. Wallraven. “Use of non-photorealistic rendering and photometric stereo in making bas-reliefs from photographs”, *Graphical Models*, vol. 76(4), 202-213, 2014.
  37. P. L. Rosin, **Y.-K. Lai**. “Artistic minimal rendering with lines and blocks”, *Graphical Models*, vol. 75(4), pp. 208-229, 2013.
  38. L. Gao, **Y.-K. Lai**, Q. Huang, S.-M. Hu. “A data-driven approach to realistic shape morphing”, *Eurographics 2013, Computer Graphics Forum*, vol. 32(2pt4), pp. 449-457, 2013.
  39. Z.-Q. Cheng, Y. Chen, R. R. Martin, **Y.-K. Lai**, A. Wang. “SuperMatching: feature matching using supersymmetric geometric constraints”, *IEEE Transactions on Visualization and Computer Graphics*, vol. 19(11), pp. 1885-1894, 2013.
  40. G. Tam, Z.-Q. Cheng, **Y.-K. Lai**, F. C. Langbein, Y. Liu, D. Marshall, R. R. Martin, X. Sun, P. L. Rosin, “Registration of 3D point clouds and meshes: a survey from rigid to

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- non-rigid”, *IEEE Transactions on Visualization and Computer Graphics*, vol. 19(7), pp. 1199-1217, 2013.
41. G.-X. Zhang, **Y.-K. Lai**, S.-M. Hu, “Efficient synthesis of gradient solid textures”, *Graphical Models*, vol. 75(3), 104-117, 2013.
  42. J. A. Quinn, F. C. Langbein, **Y.-K. Lai**, R. R. Martin, “Generalized anisotropic stratified surface sampling”, *IEEE Transactions on Visualization and Computer Graphics*, vol. 19(7), pp. 1143-1157, 2013.
  43. Y. Xiao, L. Wan, C.-S. Leung, **Y.-K. Lai**, T.-T. Wong, “Example-based color transfer for gradient meshes”, *IEEE Transactions on Multimedia*, vol. 15(3), pp. 549-560, 2013.
  44. J. Wu, R. R. Martin, P. L. Rosin, X. Sun, F. C. Langbein, **Y.-K. Lai**, D. Marshall, Y. Liu, “Making bas-reliefs from photographs of human faces”, *Computer-Aided Design*, vol. 45(3), pp. 671-682, 2013.
  45. F. M. Anuar, R. Setchi, **Y.-K. Lai**, “Trademark image retrieval using an integrated shape descriptor”, *Expert Systems with Applications*, vol. 40(1), pp. 105-121, 2013.
  46. J. A. Quinn, F. Sun, F. C. Langbein, **Y.-K. Lai**, W. Wang, R. R. Martin, “Improved initialisation for centroidal Voronoi tessellation and optimal Delaunay triangulation”, *Computer-Aided Design*, vol. 44(11), pp. 1062-1071, 2012.
  47. **Y.-K. Lai**, R. R. Martin, “Vertex location optimisation for improved remeshing”, *Graphical Models*, vol. 74(4), pp. 233-243, 2012.
  48. L. Gao, G.-X. Zhang, **Y.-K. Lai**, “Lp shape deformation”, *Science China Information Sciences*, vol. 55(5), pp. 983-993, 2012.
  49. G.-X. Zhang, S.-P. Du, **Y.-K. Lai**, T. Ni, S.-M. Hu, “Sketch Guided Solid Texturing”, *Graphical Models*, vol. 73(3), pp.59-73, 2011.
  50. **Y.-K. Lai**, M. Jin, X. Xie, Y. He, J. Palacios, E. Zhang, S.-M. Hu, X. Gu, “Metric driven RoSy field design and remeshing”, *IEEE Transactions on Visualization and Computer Graphics*, vol. 16(1), pp. 95-108, 2010.
  51. **Y.-K. Lai**, L. Kobbelt, S.-M. Hu, “Feature aligned quad dominant remeshing using iterative local updates”, *Computer-Aided Design*, vol. 42(2), pp. 109-117, 2010.
  52. C.-H. Shen, G.-X. Zhang, **Y.-K. Lai**, S.-M. Hu, R. R. Martin, “Harmonic field based volume model construction from triangle soup”, *Journal of Computer Science and Technology*, vol. 25(3), pp. 562-571, 2010.
  53. **Y.-K. Lai**, S.-M. Hu, R. R. Martin, “Automatic and topology-preserving gradient mesh generation for image vectorization”. In: *ACM SIGGRAPH 2009, ACM Transactions on Graphics*, vol. 28(3), Article No. 85, pp. 1-8, 2009.
  54. **Y.-K. Lai**, S.-M. Hu, R. R. Martin, P. L. Rosin, “Rapid and effective segmentation of 3D models using random walks”, *Computer Aided Geometric Design*, 26(6), pp. 665-679, 2009.
  55. Y.-J. Liu, **Y.-K. Lai** and S.-M. Hu, “Stripification of free-form surfaces with global error bounds for developable approximation”, *IEEE Transactions on Automation Science and Engineering*, vol. 6(4), pp. 700-709, 2009.
  56. **Y.-K. Lai**, Q.-Y. Zhou, S.-M. Hu, J. Wallner and H. Pottmann, “Robust feature classification and editing”, *IEEE Transactions on Visualization and Computer Graphics*, 13(1), pp. 34-45, 2007.
  57. H. Pottmann, J. Wallner, Y.-L. Yang, **Y.-K. Lai** and S.-M. Hu, “Principal curvatures from

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- the integral invariant viewpoint”, *Computer Aided Geometric Design*, 24, pp. 428-442, 2007.
58. **Y.-K. Lai**, S.-M. Hu and H. Pottmann, “Surface fitting based on a feature sensitive parameterization”, *Computer-Aided Design*, 38(7), pp. 800-807, 2006.
59. **Y.-K. Lai**, S.-M. Hu and R. R. Martin, “Surface mosaics”, *The Visual Computer*, 22(9-11), pp. 604-611, 2006.

### **Conference Papers**

1. Y. Qiao, L. Gao, **Y.-K. Lai**, F.-L. Zhang, M. Yuan, S. Xia, “SF-Net: Learning scene flow from RGB-D images with CNNs”, British Machine Vision Conference (BMVC), 2018.
2. J. Yang, D. She, **Y.-K. Lai**, P. L. Rosin, M.-H. Yang, “Weakly supervised coupled networks for visual sentiment analysis”, IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2018 (spotlight).
3. R. Yi, Y.-J. Liu, **Y.-K. Lai**, “Content-sensitive supervoxels via uniform tessellations on video manifolds”, IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2018.
4. Y. Chen, **Y.-K. Lai**, Y.-J. Liu, “CartoonGAN: generative adversarial networks for photo cartoonization”, IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2018.
5. Q. Tan, L. Gao, **Y.-K. Lai**, S. Xia, “Variational autoencoders for deforming 3D mesh models”, IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2018.
6. Q. Wu, J. Zhang, **Y.-K. Lai**, J. Zheng, J. Cai, “Alive caricature from 2D to 3D”, IEEE Conference on Computer Vision and Pattern Recognition (CVPR), 2018 (spotlight).
7. R. Yi, Y.-J. Liu, **Y.-K. Lai**, “Evaluation on the compactness of supervoxels”, IEEE International Conference on Image Processing (ICIP), 2018.
8. Y. Han, B. Li, **Y.-K. Lai**, Y.-J. Liu, “CFD: a collaborative feature difference method for spontaneous micro-expression spotting”, IEEE International Conference on Image Processing (ICIP), 2018.
9. Q. Tan, L. Gao, **Y.-K. Lai**, J. Yang, S. Xia, “Mesh-based autoencoders for localized deformation component analysis”, AAAI 2018 (spotlight).
10. J. Yang, D. She, **Y.-K. Lai**, M.-H. Yang, “Retrieving and classifying affective images via deep metric learning”, AAAI 2018 (oral).
11. S.-Y. Chen, L. Gao, **Y.-K. Lai**, P. L. Rosin, S. Xia, “Real-time 3D face reconstruction and gaze tracking for virtual reality”, *IEEE Conference on Virtual Reality and 3D User Interfaces*, 2018 (poster).
12. F. Langenfeld, et al. “SHREC 2018 – protein shape retrieval”, *EG Workshop on 3D Object Retrieval*, 2018.
13. Y. Chen, Y.-J. Liu, **Y.-K. Lai**, “Learning to Rank Retargeted Images”, CVPR 2017.
14. Y. Chen, **Y.-K. Lai**, Y.-J. Liu, “Transforming Photos to Comics using Convolutional Neural Networks”, ICIP 2017.
15. X. Liu, M.-M. Cheng, **Y.-K. Lai**, P. L. Rosin, “Depth-aware neural style transfer”, *Expressive* 2017.
16. P. L. Rosin, D. Mould, I. Berger, J. Collomosse, **Y.-K. Lai**, C. Li, H. Li, A. Shamir, M. Wand, T. Wang, H. Winnemoeller, “Benchmarking non-photorealistic rendering of

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- portraits”, *Expressive* 2017.
17. K. Li, M. Wang, **Y.-K. Lai**, J. Yang, F. Wu, “3-D Motion Recovery via Low Rank Matrix Restoration on Articulation Graphs”, *ICME* 2017.
  18. D. Guo, K. Li, **Y.-K. Lai**, J. Yang, “Global alignment for deformable objects captured by a single RGB-D camera”, *ICME* 2017.
  19. P. L. Rosin, **Y.-K. Lai**, “Watercolour Rendering of Portraits”, *PSIVT workshop on Vision meets Graphics*, 2017.
  20. C. Liu, P. L. Rosin, **Y.-K. Lai**, G. R. Davis, D. Mills, C. Norton. “Recovering historical film footage by processing microtomographic images”. In: *Proceedings of World Cultural Heritage Conference*, 2016.
  21. M. Wang, K. Li, F. Wu, **Y.-K. Lai**, J. Yang, “3-D motion recovery via low rank matrix analysis”. In: *Proceedings of Visual Communications and Image Processing*, 2016.
  22. A. Abdulmunem, **Y.-K. Lai**, X. Sun, “3D GLOH Features for Human Action Recognition”. In: *Proceedings of International Conference on Pattern Recognition*, 2016.
  23. C. Liu, P. L. Rosin, **Y.-K. Lai**, W. Hu, “Robust segmentation of historical parchment XMT images for virtual unrolling”. In: *Proceedings of International Congress on Digital Heritage*, 2015.
  24. P. L. Rosin, **Y.-K. Lai**, “Non-photorealistic rendering of portraits”. In: *Proceedings of Computational Aesthetics*, 2015.
  25. F. M. Anuar, R. Setchi, **Y.-K. Lai**, “Trademark retrieval based on phonetic similarity”. In: *Proceedings of IEEE International Conference on Systems, Man and Cybernetics*, 2014.
  26. D. Mills, G.R. Davis, **Y.-K. Lai**, P. L. Rosin, "Apocalypso - Recovering lost text with XMT", Proc. SPIE 9212, Developments in X-Ray Tomography IX, 2014.
  27. Y. Chen, **Y.-K. Lai**, Z.-Q. Cheng, R. R. Martin, S.-Y. Jin, “A data-driven approach to efficient character articulation”. In: *Proceedings of CAD/Graphics*, pp. 32-37, 2013.
  28. J. A. Quinn, F. C. Langbein, **Y.-K. Lai**, R. R. Martin, “Fast low-discrepancy sampling of parametric surfaces and meshes”. In: *Proceedings of Mathematics of Surfaces XIV*, 2013.
  29. P. L. Rosin, **Y.-K. Lai**, “Non-photorealistic rendering with spot colour”. In: *Proceedings of Computational Aesthetics*, pp. 67-76, 2013.
  30. F. M. Anuar, R. Setchi, **Y.-K. Lai**, “A conceptual model of trademark retrieval based on conceptual similarity”, *Knowledge-based and Intelligent Information and Engineering Systems (KES)*, *Procedia Computer Science*, vol. 22, pp. 450-459, 2013.
  31. G.-X. Zhang, **Y.-K. Lai**, S.-M. Hu, “Efficient solid texture synthesis using gradient solids”, In: *Proceedings of Computational Visual Media*, pp. 67-74, 2012 (Best Paper Award).
  32. O. Samko, **Y.-K. Lai**, D. Marshall, P. L. Rosin, “Segmentation of parchment scrolls for virtual unrolling”. In: *Proceedings of British Machine Vision Conference*, 2011.
  33. P. L. Rosin, **Y.-K. Lai**, “Towards artistic minimal rendering”. In: *Proceedings of ACM Symposium on Non-Photorealistic Animation and Rendering*, pp. 119-127, 2010.
  34. **Y.-K. Lai**, S.-M. Hu and T. Fang, "Robust principal curvatures using feature adapted integral invariants". In: *Proceedings of SIAM/ACM Joint Conference on Geometric and Physical Modeling*, pp. 325-330, 2009.
  35. **Y.-K. Lai**, L. Kobbelt and S.-M. Hu, “An incremental approach to feature aligned quad

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- dominant remeshing”. In: *Proceedings of ACM Symposium on Solid and Physical Modeling*, pp. 137-145, 2008.
36. **Y.-K. Lai**, S.-M. Hu, R. R. Martin and P. L. Rosin, “Fast mesh segmentation using random walks”. In *Proceedings of ACM Symposium on Solid and Physical Modeling*, pp. 183-191, 2008.
  37. **Y.-K. Lai**, Y.-J. Liu, Y. Zang and S.-M. Hu, “Fairing wireframes in industrial surface design”. In: *Proceedings of IEEE International Conference on Shape Modeling and Applications*, pp. 29-38, 2008.
  38. Y. Zang, Y.-J. Liu and **Y.-K. Lai**, “Note on industrial applications of Hu’s surface extension algorithm”, *Geometric Modeling and Processing*, pp. 304-314, 2008.
  39. W. Zeng, X. Yin, Y. Zeng, **Y.-K. Lai**, X. Gu, D. Samaras, “3D face matching and registration based on hyperbolic Ricci flow”, *CVPR Workshop on 3D Face Processing*, pp.1-8, 2008.
  40. Y.-J. Liu, **Y.-K. Lai** and S.-M. Hu, “Developable strip approximation of parametric surfaces with global error bounds”, *Pacific Graphics*, pp.441-444, 2007.
  41. **Y.-K. Lai**, S.-M. Hu and R. R. Martin, “Feature sensitive mesh segmentation”. In: *Proceedings of ACM Symposium on Solid and Physical Modeling*, pp. 7-16, 2006.
  42. Y.-L. Yang, **Y.-K. Lai**, S.-M. Hu and H. Pottmann, “Robust principal curvatures on multiple scales”, *Eurographics Symposium on Geometry Processing*, pp. 223-226, 2006.
  43. **Y.-K. Lai**, S.-M. Hu, X. Gu and R. R. Martin, “Geometric texture synthesis and transfer via geometry images”. In: *Proceedings of ACM Symposium on Solid and Physical Modeling*, pp. 15-26, 2005.

### **Book Chapters**

1. **Y.-K. Lai**, P. L. Rosin, “Non-photorealistic rendering with reduced colour palettes”. In: *Image and Video-based Artistic Stylisation, Computational Imaging and Vision* series, vol. 42(2), pp. 211-236, Springer, 2013.

### **Patents**

1. Method and system for rapidly vectorizing image by gradient meshes based on parameterization, S. Hu and Y. Lai, US Patent No. 9,508,162 (Awarded 29/11/2016).

### **Honours and Awards**

- Computers & Graphics Valuable Reviewer Award 2013-2014
- National Excellent Doctoral Dissertation of China Award, 2010.
- First-Class Excellent Doctoral Thesis, Tsinghua University, 2008
- Excellent PhD Graduate, Dept. of Computer Science and Technology, Tsinghua University, 2008.
- Microsoft Research Asia Fellowship, 2007.
- First-class Scholarship for Excellent Students in Tsinghua University (Morgan Stanley Scholarship), 2006.
- First-class Scholarship for Excellent Students in Tsinghua University (Sony Scholarship), 2002.
- Gold medal in National Olympiad in Informatics (NOI) of China, 1998.



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## **Admin. Roles**

- 2017-present: Deputy Director of Research
- 2017-present: Deputy Director of PGR Studies
- 2017-present: School Seminar Co-ordinator
- 2009-2017: Year 2 Tutor

## **Other Activities**

- Welsh Crucible 2015 participant
- Team member for Green Impact Bronze awards 2014, 2015
- Team member for Green Impact Silver award 2016, 2017

## **Professional Activities**

Journal editorial board member

- The Visual Computer (since Nov. 2012)

Conference Co-Chair

- Computational Visual Media 2016
- Eurographics Symposium on Geometry Processing 2014

Workshop Co-Chair:

- BMVA technical meeting on analysis and processing of RGBD data (2017)
- PSIVT workshop on Vision meets Graphics (2017)

Program committee member

- ACM Symposium on Solid and Physical Modeling, SIAM Conference on Geometric & Physical Modeling (SPM 2012, 2013, 2014, 2015, 2016, 2017, 2018)
- Geometric Modeling and Processing (GMP 2012, 2014, 2015, 2016, 2017, 2018)
- Eurographics Symposium on Geometry Processing (SGP 2014, 2015, 2017, 2018)
- British Machine Vision Conference (BMVC) Reviewers (2015, 2016, 2017) Area Chair (2018)
- Computer Graphics International (CGI 2018)
- Pacific Graphics (PG 2012, 2015, 2016, 2017, 2018)
- International Symposium on Visual Computing (ISVC 2018)
- SIGGRAPH Asia Briefs and Posters 2014, 2015, 2016
- Expressive 2014, 2015, 2016, 2018
- Computational Visual Media (CVM 2012, 2013, 2015, 2017, 2018, 2019)
- IEEE Computer-Aided Design and Computer Graphics (CAD/Graphics 2011, 2013, 2015, 2017)
- Eurographics 2011 Short Papers
- Intl. Conf. on Computer Animation and Social Agents (CASA 2010)
- Computer Graphics & Visual Computing (CGVC 2014, 2015, 2016)
- PSIVT Workshop on Vision meets Graphics (2015)

Member of EPSRC Associate Peer Review College.

Reviewer for proposals for EPSRC, Welsh government, Swiss NSF, Canadian research council.

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Reviewer for major journals and conferences, including

- ACM Transactions on Graphics
- IEEE Transactions on Pattern Analysis and Machine Intelligence
- IEEE Transactions on Image Processing
- IEEE Transactions on Visualization and Computer Graphics
- IEEE Transactions on Affective Computing
- Computer-Aided Design
- Computer Aided Geometric Design
- Computer Graphics Forum
- The Visual Computer
- Computers & Graphics
- Graphical Models
- Journal of Computational and Applied Mathematics
- IET Computer Vision
- Multimedia Tools and Applications
- Science in China
- Journal of Computer Science and Technology
- Remote Sensing
- Journal of Real-Time Image Processing
- PLOS One
- SIGGRAPH
- SIGGRAPH Asia
- Eurographics (EG)
- Pacific Graphics (PG)