Department of Mathematics

Computational Conformal Geometry

My recent research focuses on theories, algorithms, and applications of computational conformal geometry. On this topic, I have developed a series of effective and reliable energy minimization algorithms for the computation of angle-, area- and volume-preserving parameterizations of 2- and 3-manifolds, respectively, with guaranteed existence of nontrivial limit points under some mild conditions. The efficiency of the algorithms outperforms the other state-ofthe-art algorithms.

Techniques used in study

Computer Vision and Graphics Manifold Registration and Homotopy Medical Image Segmentation and Analysis

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Background:

PhD in Applied Mathematics, National Chiao Tung University, Hsinchu, Taiwan

Funding:

Ministry of Science and Technology National Taiwan Normal University





Vertebrae Registration





Face Transformation









Virtual Colonoscopy

Virtual Makeup

Recent Publications

- M.-H. Yueh, T. Li, W.-W. Lin, and S.-T. Yau, A New Efficient Algorithm for Volume-Preserving Parameterizations of Genus-One 3-Manifolds, SIAM J. Imaging Sci., 13(3):1536-1564, 2020.
- M.-H. Yueh, H.-H. Huang, T. Li, W.-W. Lin, and S.-T. Yau, Optimized Surface Parameterizations with Application on Chinese Virtual Broadcasting, Elec. Trans. Num. Anal., 53:383-405, 2020.
- M.-H. Yueh, T. Li, W.-W. Lin, and S.-T. Yau, A Novel Algorithm for Volume-Preserving Parameterizations of 3-Manifolds, SIAM J. Imaging Sci. 12(2):1071-1098, 2019.
- M.-H. Yueh, W.-W. Lin, C.-T. Wu, and S.-T. Yau, A Novel Stretch Energy Minimization Algorithm for Equiareal Parameterizations, J. Sci. Comput. 78(3): 1353-1386, 2019.

