# Fan Wang

Mobile: (631) 559-0857 Email: fan.gordon.wang@gmail.com

**SKILLS** C/C++, CUDA, Python, Java, OpenCV, PyTorch, TensorFlow, Deep Learning

**EDUCATION**

**Stony Brook University** Sep. 2016 – Present

*Ph.D. Candidate, Computer Science*

- GPA: 3.80 / 4.0
- Advisor: Prof. Chao Chen

**National University of Singapore** Sep. 2012 – Jul. 2013

*M.S. Electrical Engineering*

- GPA: 3.52 / 4.0

**Lanzhou University**, Lanzhou, Gansu, China Sep. 2008 – Jun. 2012

*B.S. Computer Science*

- GPA: 3.89 / 4.0 (Rank: 2 / 77)

**RESEARCH EXPERIENCE 6 YEARS**

**Euler Characteristic Curve Computation with GPU**

Proposed a GPU algorithm of Euler Characteristic Curve computation for 2D and 3D images. Our work exploited GPU memory hierarchy and achieved 5X speedup over a multithreading CPU implementation.

**Topological Biomarker for pCR Prediction**

Extracted topological features from breast DCE-MRI data to direct a deep neural network's attention to a dedicated set of voxels with strong biological relevance for pCR prediction.

**Topology-Aware Generative Adversarial Network**

Introduced a topology loss that bridged the gap between synthetic and real image distribution in the topological feature space. Our GAN network generated realistic looking images with realistic topology which served as data augmentation for segmentation tasks.

**WORK EXPERIENCE 4 YEARS**

*VI DIMENSIONS PTE LTD*, Singapore Jan. 2016 – Aug. 2016

**GPU-Acceleration for Background Subtraction System**

Designed a CUDA accelerated Gaussian Mixture Model background subtraction algorithm for a surveillance system. Our work achieved 20X speedup over the CPU implementation.

*ADSC Illinois at Singapore Pte. Ltd*, Singapore Sep. 2013 – Jan. 2016

**Repetitive Structures Disambiguation for 3D Reconstruction**

Proposed to iteratively construct and decompose a minimum spanning tree from the images adjacency matrix to disambiguate repetitive structures commonly found in 3D reconstructions.

**Wide-Baseline Feature Matching System**

Developed a feature matching system which reliably generated large numbers of good quality correspondences over wide baselines where previous techniques provide few or no matches.

**CUDA Affine SIFT**

Built an affine-SIFT module with affine simulations performed inside GPU. Our work achieved up to 30X speedup over CPU ASIFT implementation.

**PUBLICATIONS**

1. **Fan Wang**, Hubert Wagner, Chao Chen, "GPU Computation of the Euler Characteristic Curve for Imaging Data." International Symposium on Computational Geometry (***SoCG***), 2022, (acceptance rate 36.8%).

2. **Fan Wang**, Saarthak Kapse, Steven Liu, Prateek Prasanna, Chao Chen, "TopoTxR: A Topological Biomarker for Predicting Treatment Response in Breast Cancer." International Conference on Information Processing in Medical Imaging (***IPMI***), 2021, (acceptance rate 30%).

3. **Fan Wang**, Huidong Liu, Dimitris Samaras, Chao Chen, "TopoGAN: A Topology-Aware Generative Adversarial Network." European Conference on Computer Vision (***ECCV***), 2020, (**Oral**, acceptance rate 2.1%).

4. **Fan Wang**, Aditi Nayak, Yogesh Agrawal, Roy Shilkrot, "Hierarchical Image Link Selection Scheme for Duplicate Structure Disambiguation." *British Machine Vision Conference (**BMVC**),* 2018.

5. Wen-Yan Lin, **Fan Wang**, Min-Ming Cheng, Sai-Kit Yeung, Philip H.S. Torr, Minh N. Do, Jiangbo Lu, "CODE: Coherence Based Decision Boundaries for Feature Correspondence." *Transactions on Pattern Analysis and Machine Intelligence (**TPAMI**),* 2017.

HONOURS AND AWARDS

National Scholarship of China, Dec 2009

First Class Scholarship of Lanzhou University, Dec 2010

First Class Scholarship of Lanzhou University, Dec 2011