Fan Wang

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LinkedIn: https://www.linkedin.com/in/fanwang-sbu/ Portfolio: https://seravee08.github.io/

SKILLS

C/C++, CUDA, Python, Java, OpenCV, PyTorch, TensorFlow, Deep Learning, Machine Learning
3D Vision, Image Processing, Medical Imaging

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

Project: 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

Project: 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.

Project: 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.

Project: GPU-Acceleration of Affine SIFT Descriptors

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

INTERNSHIP

Oregon State University May 2021 – Aug 2021

EXPERIENCE

Developed topological measurements to gauge the correctness of the reconstructed floorplans and visualization tools for the floorplans.

Saint Francis Hospital May 2017 – Aug 2017

Developed deep learning solutions for medical image reconstructions.

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**, Chunhua Deng, Bo Yuan, Chao Chen "Hardware Acceleration of Persistent Homology Computation." *Medical Imaging and Computer Assisted Intervention (**MICCAI**) workshop, 2019.*

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

6. 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