Haoye CAI (Mark)

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EDUCATION

The Hong Kong University of Science & Technology, HK Sept. 2014 – Pres.
Bachelor of Science in Computer Science and Mathematics (Double Major)
- GPA**: 4.048** / 4.3 (**Top 1%**) - Major GPA: **4.16** / 4.3
Related courses: Honors Calculus, Honors Analysis, Honors OOP & Data Structure, Honors Algorithms, AI (graduate level)

Georgia Institute of Technology, US Jan. 2017 – May. 2017
Exchange in Spring, 2017 - GPA**: 4.0** / 4.0
Related courses: Machine Learning (graduate level), Game AI (graduate level)

RESEARCH

Deep Video Generation, Prediction and Completion of Human Action Sequences, HKUST June 2017 – Pres.
- arXiv link | Project Website | Video Demo - **Submitted to CVPR 2018, First Author** *Supervisor*: Prof. Chi Keung Tang

- Proposed and implemented a two-stage generative model to solve human video generation, prediction and completion uniformly.
- Generation: in the first stage, utilized GAN and WGAN to train a generator that maps random noise into human pose sequences. In the second stage, trained a network that transforms poses to real human images, using feature-matching loss.
- Prediction/Completion: optimized in the latent space by back-propagating the L1 distance to constraints using BFGS algorithm.
- Our method outperformed existing state-of-the-art methods both qualitatively and quantitatively.

***(Medical)* Cross-modality Training to Learn Cardiac Motion Flow for SSFP MRI Images**, GaTech Jan -- May. 2017
- Project Website | Video Demo - **In process of submission, First Author** *Supervisor*: Prof. James Rehg

- Utilized motion from another modality DENSE as supervision to learn cardiac motion flow in ordinary SSFP MRI images.
- Conducted spatial-temporal registration for the two modalities. Trained a Siamese Network to learn robust feature embeddings for SSFP image patches. Conducted patch matching and edge-preserving interpolation to produce dense flow fields.
- Our method outperformed existing state-of-the-art optical flow algorithms applied on this medical imaging domain.

Undergraduate Research Opportunities Program, HKUST Feb. 2016 – Dec. 2016
- Indoor localization and Mobile Computing *Supervisor*: Prof. Shueng-Han Gary Chan

- Applied Gaussian Process Regression to predict Wi-Fi signal intensity for indoor location based on training data gathered by crowdsourcing. Tested its feasibility based on on-site data collected by myself.
- Extended the method to do estimation in outdoor environments.

- Artificial Intelligence with Application to Finance *Supervisor*: Prof. Qiang Yang

- Implemented a CNN using TensorFlow to conduct text classification. Performed sentiment analysis for stock market articles.

INTERNSHIP

SenseTime Group Limited (A leading deep learning technology company), Hong Kong June -- Aug. 2017
3D Human Pose Estimation for Monocular Images, R&D Intern, Depth and Reconstruction Team

- Applied fully-connected neural nets to learn 2D-to-3D mapping. Incorporated raw image information by building a DenseNet to extract features which are then concatenated with 2D pose vectors in multi-stage architecture.
- Achieved state-of-the-art performance in this task.

CONTEST

Champion in CodeIT Suisse Coding Challenge, Credit Suisse, Hong Kong (Github page) Oct. 2016

- Won first place in the hackathon competition as the main contributor.
- Applied techniques including Nodejs Cluster, Message Queue, asynchronous method invocation, Firebase, D3.js to build a high-frequency arbitrage trading solution using master-slave architecture.

SELECTED AWARDS

- Dean's List (for each semester) 2015 - 2017
- The Hong Kong Electric Co. Ltd. Scholarship Mar. 2016
- University's Scholarship Scheme for Continuing Undergraduate Students Mar. 2017
- Second prize in National Olympiad in Informatics in Provinces Oct. 2012

EXTRACURRICULAR ACTIVITIES

China Entrepreneur Network, HKUST, Hong Kong Feb. 2015 – Feb. 2016
IT Secretary & Internal Secretary

- Built and maintained the society's official website
- Organized and coordinated Social Innovation Forum, Innovative Entrepreneurship Training Program, and Member Reunion