

# Haoye CAI (Applying for MSCS)

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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: **4.15** / 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 EXPERIENCE

### 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, Summer 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 CodelT Suisse Coding Challenge, Credit Suisse, Hong Kong ([Github page](#))

Oct. 2016

- Won the championship 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