Deqing Fu

312-483-9447 | deqing@uchicago.edu | 808 S. Michigan Ave. Chicago, IL 60605

Education

The University of Chicago — Chicago, IL
B.S. in Mathematics (with Honors)*; B.S. in Computer Science* (with Honors)*; B.A. in Statistics* — *Sep. 2016 – Jun. 2020*
GPA: Cumulative: 3.69/4.0 | Mathematics: 3.88 | Computer Science: 3.80 | Statistics: 3.94
Honors: Liew Family College Research Fellows Fund; Dean's List 2016-2020.

The University of Chicago — Chicago, IL
M.S. in Statistics | GPA: 3.9/4.0 — *Sep. 2020 – Jun. 2022*
Honors: Susanne H. Rudolph Scholarship

Experience

Research Assistant — Dec. 2020 – Present
The University of Chicago, Department of Statistics — *Chicago, IL*
- Researching on **Machine Learning Thoery** and **Time-Aware Machine Intelligence**, supervised by *Professor Lek-Heng Lim* and *Dr. Bradley Nelson*.
- Proposed the idea to use Convolution Auto-Encoders to extract embedding of images from frames in videos, and to apply the technique of persistent homology and Lorentz transform on this embedding manifold to understand the topology of deep neural networks on time-dependent data, such as videos.

Research Assistant — Sep. 2020 – Present
The University of Chicago, Jason Salavon Studio — *Chicago, IL*
- Researching on **Generative Adversarial Networks** and **Style Translation**, supervised by *Professor Jason Salavon*.
- Initiated the idea of using pose key-points, as one conditioning for our style transferring framework. Trained our framework on both standard datasets (CelebA-HQ and FFHQ-Wild) and a proprietary television series dataset (ClassicTV).
- Benchmarked our model to compare with other state-of-the-art methods (DS-Map, StarGAN-v2 and SPADE). We achieved better FID scores on FFHQ-Wild and ClassicTV significantly and maintained a comparable performance on CelebA-HQ.
- Submitted a paper, *Harnessing the Conditioning Sensorium for Improved Image Translation*, to SIGGRAPH 2021.

Research Assistant — Jan. 2019 – Present
The University of Chicago, Department of Computer Science — *Chicago, IL*
- Researching on **Computer Vision** and Deep Learning, supervised by *Professor Michael Maire*. Researching on **Amodal Image Instance Segmentation** to infer segmentations of both visible and occluded parts of objects.
- Proposed and experimented a multi-level sheet model as an approach to make object connectivity and occlusion relationships explicit: image pixels are bound to different sheets, with jumps between sheets enabling one object to slide behind another.

Software Engineer Intern — Jun. 2018 – Aug. 2018
Industrial Toys Studio, Electronic Arts — *Pasadena, CA*
- Implemented game logic for the prototype of a mobile first-person shooter game using Unreal Engine 4. Developed tools for engineering and art teams, debugged, and optimized existing functionalities of the game prototype.

Summer Research Assistant — Jun. 2017 – Aug. 2017
Argonne National Laboratory, Mathematics and Computer Science Division — *Lemont, IL*
- Researched on **Automatic Differentiation**, supervised by *Dr. Paul Hovland and Dr. Sri Hari Krishna Narayanan*.
- Benchmarked the efficiency of ADOL-C, an Automatic Differentiation algorithm and implemented machine learning codes with it. Presented research results to Argonne scientists at Summer Argonne Students' Symposium.
- Submitted a report paper, *Comparison of two gradient computation methods in Python*, with advisors Dr. Paul Hovland and Dr. Sri Hari Krishna Narayanan, which was accepted as a poster at NIPS 2017 Autodiff Workshop.

Relevant Coursework

Mathematics:
Abstract Algebra (Honors), Discrete Math (Honors), Combinatorics (Honors), Algorithms (Honors), Real Analysis (Accelerated), Complex Analysis, Ordinary Differential Equations.

Statistics and Applied Math:
Distribution Theory, Measure-Theoretic Probability, Matrix Computation, Optimization, Convex Optimization, Nonlinear Optimization, Monte Carlo Simulation, Markov Chains and Brownian Motions, Time Series Analysis, Applied Linear Statistical Models, Generalized Linear Models, Numerical Partial Differential Equations.

Machine Learning and Deep Learning:
Machine Learning, Speech Technologies, Computer Vision, Computational Linguistics, Probabilistic Graphical Models, Fundamentals of Deep Learning, Topics in Deep Learning: Discriminative Models

Technical Skills

Languages: Python, C/C++, MATLAB, R, SQL
Deep Learning: TensorFlow, Keras, PyTorch, Computer Vision