Wufei Ma

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EDUCATION

Rensselaer Polytechnic Institute *Jan. 2017 – Present*
B.S. in Computer Science *Troy, NY*
B.S. in Mathematics

- GPA: 3.91/4.0
- Dean's Honor List: Spring 17, Fall 17, Spring 18, Fall 18, Spring 19
- Outstanding Performance Announced:
  Foundations of Computer Science (Prof. David Goldschmidt), Intro to AI (Prof. Lirong Xia)

Columbia University *May 2017 – Aug. 2017*
Summer Session in Computer Science *New York, NY*

- GPA: 4.0/4.3

Wuhan University *Sept. 2015 – Nov. 2016*
B.S. in Mathematics *Wuhan, China*

- GPA: 3.3/4.0
- Undergraduate Scholarship from Ministry of Education in China

RESEARCH WORK

Feature Learning with conditional GAN *Apr. 2019 – Present*
Undergraduate Research Assistant *Data Science Research Center, RPI (with PNNL)*
Advisor: Prof. Bülent Yener

- Build conditional GAN models to generate synthetic microstructure images using the materials properties and texture properties as the generative conditions
- Characterize microstructures by constructing high-level computer vision features and further predicting the material science features

Preference Learning from Natural Languages *Sept. 2019 – Present*
Undergraduate Research Assistant *Dept. of Computer Science, RPI*
Advisor: Prof. Lirong Xia

- Collect and generate training data from Slack and Reddit discussions about different alternatives
- Apply pre-trained sentiment and stance analysis models to generate NLP features
- Aggregate users' preferences and predict group's preferences or decisions

Driving Anger Detection with CNN *Jun. – Aug. 2019*
Machine Learning Engineer *Remote (with BMW Research, Shanghai)*
Advisor: Dr. Bowen Cai

- Collect video recordings of 20 drivers' faces under different emotions: relaxed, angry, sleepy, etc.
- Build an integrated model composed of pattern recognition and CNN to recognize and analyze drivers' anger emotion status; Connect the model with BMW iDrive for notifications (ongoing)

Microstructure Characterization with Computer Vision *Sept. 2018 – Mar. 2019*
Undergraduate Research Assistant *Data Science Research Center, RPI & PNNL*
Advisor: Prof. Bülent Yener

- Characterize properties of various microstructures using CNN and low-level texture properties
- Build an image segmentation pipeline to quantify different microstructures across 5 phases

Predicting the Metastasis of Breast Cancer from Tissue Images *Jun. 2019 – Paused*
Undergraduate Research Assistant *Data Science Research Center, RPI (with OHSU)*
Advisor: Prof. Bülent Yener

- Apply image segmentation on images of dyed metastatic and non-metastatic cancer tissue samples
- Characterize the distribution of metastatic and non-metastatic cancer cells by image segmentation

TALKS

Adversarial Networks for Microstructure Generation and Modeling Phase Transformation Kinetics
The Minerals, Metals & Materials Society Annual Meeting, Feb. 2020 *San Diego, CA*

- Presentation on synthesizing and analyzing microstructures with the help of conditional GANs

PUBLICATIONS

An image-driven machine learning approach to kinetic modeling of a discontinuous precipitation reaction

- Submitted for Materials Characterization for peer review; also preprinted on arXiv.
- Co-first author: Elizabeth Kautz (Materials Science) and Wufei Ma (Computer Vision)

Adversarial Networks for Microstructure Generation and Modeling Phase Transformation Kinetics

- Paper abstract accepted for publication.

WORK

Undergraduate Teaching Assistant (RPI) *Sept. – Dec. & Jan. – May 2019*

- Undergraduate teaching assistant for CSCI-2200 Foundations of Computer Science at RPI
- Hold lab review sections and office hours

PROJECTS

Face Image Generator with FaceGen* *May – Jun. 2019*
Machine Learning Engineer *Intelligent System Laboratory, RPI*
Advisor: Qiang Ji

- Create an autonomous program to generate face images for training and testing conditioned on face features (age, gender, race, shape features) and facial expressions based on face action units
- Generate 3-D graphic models from real-world face images by adding guideline points

** FaceGen is a 3-D face rendering software working as the backend of this project*

Web App for Wikimania 2017 *Jul. – Aug. 2017*
Web Developer *New York, NY*

- Create an official web app on large-scale web servers for the yearly Wikimania Conference for meeting schedules, dining plans, and transportation directions during the conference (team of 2)

LEADERSHIP

Soccer Team, College of Mathematics *Sept. 2015 – Nov. 2016*
Captain *Wuhan, China*

- Enter semi-final and quarter final of WHU Soccer Champion Cup in 2015 and 2016, out of 32
- Host weekly training and organized friendly games every month

Shanghai High School Rubik's Cube Club *Jan. 2014 – Jan. 2015*
President *Shanghai, China*

- Host weekly tutorials or workshops for different variations of Rubik's Cubes
- Host monthly competitions and have more than 80 new students joining our club

SKILLS & OTHERS

- **Programming**: Python, MATLAB, Java, C++
- **Skills**: Operation Research, Web Scrapping, Linux, Apache Server, Flask
- **Coursera**: Machine Learning, Deep Learning, Introduction to Cyber Attacks
- **Service**: TensorFlow Localization Team Reviewer