

Zijie (Jay) Wang

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RESEARCH INTERESTS

Machine Learning interpretability, fairness, security, and visual analytics.

EDUCATION

Aug 2019 to Present	Georgia Institute of Technology , Atlanta, GA Ph.D. in Machine Learning Advisor: Polo Chau
Sept 2015 to May 2019	University of Wisconsin–Madison , Madison, WI Bachelor of Science (B.S.) Majors: Computer Sciences (Honors), Statistics (Honors), Mathematics Overall GPA: 3.95/4.00

PAPER UNDER REVIEW

1. **Zijie J. Wang**, Alex J. Walsh, Melissa C. Skala, Anthony Gitter. *bioRxiv 2019*. Classifying T cell activity in autofluorescence intensity images with convolutional neural networks.

POSTER PRESENTATION AND TALK

1. **Zijie J. Wang**, Alex J. Walsh, Melissa C. Skala, Anthony Gitter. Classifying T cell activity with convolutional neural networks. (Presented in [ISCB GLBIO 2019](#))
2. **Zijie J. Wang**, Alex J. Walsh, Melissa C. Skala, Anthony Gitter. Using Transfer Learning to Classify Breast Cancer Cells with Fluorescence Imaging. (Presented in [UW-Madison Undergraduate Symposium 2018](#))
3. **Zijie J. Wang**, Tiffany Heaster, Quan Yin, Alex J. Walsh, Melissa C. Skala, Anthony Gitter. Classifying T cell activity with convolutional neural networks. (Presented in [UW–Madison Senior Honors Thesis Symposium 2018](#))

AWARDS AND GRANTS

May 2019	University Book Store Academic Excellence Award An award recognizing undergraduate students who have completed an outstanding independent project, such as a senior thesis, at the University of Wisconsin–Madison
June 2018	Honors Senior Thesis Summer Research Grant A research grant funding students to undertake more demanding and extensive senior thesis research projects
June 2017	Welton Summer Sophomore Apprenticeship A research grant awarded to talented students to participate in actual, cutting-edge research

RESEARCH EXPERIENCE

Sept 2019 to Present Madison, WI	<i>Research Assistant</i> at Georgia Tech Advisor: Polo Chau MLSPLOIT <ul style="list-style-type: none">• Cloud-based platform that enables researchers and students to rapidly evaluate and compare state-of-the-art adversarial attacks and defenses for machine learning models• Design and develop visualization techniques to compare adversarial attacks and defenses
Dec 2017 to Aug 2019 Madison, WI	<i>Undergraduate Researcher</i> at Morgridge Institute for Research Advisor: Anthony Gitter CELL IMAGE CLASSIFICATION <ul style="list-style-type: none">• Classify T-cell and breast cancer cell types using fluorescent images• Compare and analyze various classifiers: logistic regression, fully connected neural network, convolutional neural network and transfer learning• Interpret feature representations from different learning layers in the transfer learning model CELL PAINTING AND DRUG DISCOVERY <ul style="list-style-type: none">• Analyze about 1 million 5-channel cell-painting images of bone tumor cells• Explore latent space between the image space and chemical molecule space• Study how to remove batch effects of microscopy images at scale
Feb 2017 to Dec 2017 Madison, WI	<i>Research Assistant</i> at Electrical and Computer Engineering Department Advisor: Yu Hen Hu VIDEO OBJECT TRACKING <ul style="list-style-type: none">• Study how to track car driver's head position and orientation from low-quality traffic video• Develop semi-automatic video annotation software with Viola-Jones frontal face detector for training object tracking algorithms FACIAL REENACTMENT <ul style="list-style-type: none">• Implement real-time face tracking algorithms on iOS devices• Train a facial reenactment model using GANs and port it to iOS devices

TEACHING EXPERIENCE

Jan 2019 to May 2019 Madison, WI	<i>Peer Mentor</i> at UW–Madison Computer Sciences <ul style="list-style-type: none">• Undergraduate teaching assistant for Computer Graphics (CS 559)• Help professor create course notes and weekly assignments• Host office hours and answer student questions on Piazza
Jan 2016 to Jan 2017 Madison, WI	<i>Tutor</i> at Greater University Tutoring Service <ul style="list-style-type: none">• Instruct peers one-on-one in programming and math problems for three hours weekly• Lead review sections to help students study for calculus exams
Nov 2016 to May 2017 Madison, WI	<i>Tutor</i> at Division of Diversity, Equity and Educational Achievement <ul style="list-style-type: none">• Mentor undergraduate students in DDEEA programs for Data Structure course• Design two worksheets and give detailed solutions every week

COURSE PROJECTS

Spring 2018	Group Assignment Optimization Instructor: Laurent Lessard <ul style="list-style-type: none">• Course project for Introduction to Optimization, selected as the best project• Design a mixed integer quadratic programming model to help Professor Ben Liblit improve group assignment in his Software Engineering class
Spring 2017	Madison Restaurant Yelp Ratings Prediction Instructor: Hyunseung Kang <ul style="list-style-type: none">• Course project for Applied Regression Analysis, won the in-class Kaggle Challenge• Use Yelp comment texts to predict the categorical rating• Explore multiple models including neural network with GloVe word representation

RELATED COURSES

Computer Science:	Deep Learning, Artificial Intelligence, Computer Graphics, Operating System
Statistics:	Mathematical Statistics, Multivariate Analysis, Experiment Design
Mathematics:	Nonlinear Optimization, Real Analysis, Stochastic Processes

PROGRAMMING SKILLS

Languages:	Python, R, JavaScript, Julia, Swift, L ^A T _E X, C++, C, SQL
Packages:	Keras, PyTorch, Tensorflow, D3.js, scikit-learn, OpenCV, CellProfiler