Zijie (Jay) Wang

756 West Peachtree Street S1349F, Atlanta, GA 30308, United States
jayw@gatech.edu | https://zijie.wang

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

Publications

1. **Zijie J. Wang**, Alex J. Walsh, Melissa C. Skala, Anthony Gitter. Classifying T cell activity in autofluorescence intensity images with convolutional neural networks. *Journal of Biophotonics 2019.*
2. **Zijie J. Wang**, Alex J. Walsh, Melissa C. Skala, Anthony Gitter. Classifying T cell activity with convolutional neural networks. (Poster presented in *ISCB GLBIO 2019*)
3. **Zijie J. Wang**, Tiffany M. Heaster, Quan Yin, Alex J. Walsh, Melissa C. Skala, Anthony Gitter. Using Transfer Learning to Classify Breast Cancer Cells with Fluorescence Imaging. (Poster presented in *UW-Madison Undergraduate Symposium 2018*)

Invited Talks

1. **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 2019*)

Awards and Grants

May 2019	**University Book Store Academic Excellence Award ($1000)** 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 ($3000)** A research grant funding students to undertake more demanding and extensive senior thesis research projects
June 2017	**Welton Summer Sophomore Apprenticeship ($2500)** A research grant awarded to talented students to participate in actual, cutting-edge research

Research Experience

Sept 2019 to Present
Atlanta, GA

PhD Researcher at **Georgia Tech**
Mentor: Polo Chau

MLsploit

- 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 different adversarial attacks and defenses

CNN Explainer

- Design and develop educational tools to teach CNN to college students
- Explore interactive techniques to make education engaging and effective

Dec 2018 to June 2019
Madison, WI

Undergraduate Researcher at **UW–Madison Computer Science**
Mentor: Michael Gleicher

RecommenderVis

- Design a visual analytics tool for recommender system researchers
- Interactively visualize user-item rating matrix with statistics-conditioned subsampling to spot abnormal ratings and predictions

Dec 2017 to Aug 2019
Madison, WI

Undergraduate Researcher at **Morgridge Institute for Research**
Mentor: Anthony Gitter

Cell Image Classification

- 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

- 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

Research Assistant at **UW–Madison ECE Deapartment**
Mentor: Yu Hen Hu

Video Object Tracking

- 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

- Implement real-time face tracking algorithms on iOS devices
- Train a facial reenactment model using GANs and port it to iOS devices

Coursework

Computer Science:	Deep Learning, Artificial Intelligence, Computer Graphics, Operating System, Algorithm, Data Structure, Optimization Modeling, Database
Statistics:	Mathematical Statistics, Multivariate Analysis, Experiment Design
Mathematics:	Nonlinear Optimization, Real Analysis, Stochastic Processes, Probability Theory, Linear Algebra

Teaching Experience

Jan 2019 to May 2019
Madison, WI

Undergraduate Teaching Assistant at **UW–Madison Computer Sciences**

- Computer Graphics (CS 559) Spring 2019. Instructor: Michael Gleicher
- Create course notes and weekly assignments
- Host office hours and answer student questions on Piazza

Jan 2016 to Jan 2017
Madison, WI

Tutor at **Greater University Tutoring Service**

- 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

Tutor at **Division of Diversity, Equity and Educational Achievement**

- Mentor undergraduate students in DDEEA programs for Data Structure course
- Every week design two worksheets and give detailed solutions

Course Projects

Spring 2018

Group Assignment Optimization
Instructor: Laurent Lessard

- 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

- 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

Skills

Programming:	Python, R, JavaScript, Julia, Swift, C++, C, SQL, LaTeX
Packages:	Keras, PyTorch, Tensorflow, D3.js, scikit-learn, OpenCV, CellProfiler
Design:	Affinity Designer, Sketch, Omni Graffle, Illustrator