

# Zijie (Jay) Wang

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## RESEARCH INTERESTS

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Machine Learning interpretability, fairness and security, visual analytics, and biomedical image analysis.

## EDUCATION

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

## RESEARCH EXPERIENCE

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

## PAPER UNDER REVIEW

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**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

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**Zijie J. Wang**, Alex J. Walsh, Melissa C. Skala, Anthony Gitter. [Classifying T cell activity with convolutional neural networks](#). (Presented in ISCB GLBIO 2019)

**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)

**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)

## TEACHING EXPERIENCE

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

## AWARDS AND GRANTS

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June 2018	<b>Honors Senior Thesis Summer Research Grant</b> A research grant funding students to undertake more demanding and extensive senior thesis research projects
June 2017	<b>Welton Summer Sophomore Apprenticeship</b> A research grant awarded to talented students to participate in actual, cutting-edge research

## COURSE PROJECTS

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

## PROGRAMMING SKILLS

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Languages: Python, R, Julia, JavaScript, Swift,  $\text{\LaTeX}$ , C++, C, SQL  
Packages: Tensorflow, Keras, D3.js, scikit-learn, OpenCV, CellProfiler