# Zijie Wang

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## RESEARCH INTERESTS

Machine learning, computer vision, biomedical image analysis, healthcare, interpretability of machine learning, and visual analytics.

## EDUCATION

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| Sept 2015 to May 2019 | **University of Wisconsin - Madison**, Madison, WI<br>Bachelor of Science (B.S.)<br>Majors: Computer Science (Honors), Statistics (Honors), Mathematics<br>Overall GPA: 3.97/4.00 |

## RESEARCH EXPERIENCE

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| Dec 2017 to Present<br>Madison, WI | *Undergraduate Researcher* at **Morgridge Institute for Research**<br>Advisor: Anthony Gitter<br><br>**CELL IMAGE CLASSIFICATION**<br>• Classify T-cell and breast cancer cell types using fluorescent images<br>• Compare and analyze various classifiers: logistic regression, fully connected neural network, convolutional neural network and transfer learning<br>• Interpret feature representations from different learning layers in the transfer learning model<br><br>**CELL PAINTING AND DRUG DISCOVERY**<br>• Analyze about 1 million 5-channel cell-painting images of bone tumor cells<br>• Explore latent space between the image space and chemical molecule space<br>• Study how to remove batch effects of microscopy images at scale |
| Feb 2017 to Dec 2017<br>Madison, WI | *Research Assistant* at **Electrical and Computer Engineering Department**<br>Advisor: Yu Hen Hu<br><br>**VIDEO OBJECT TRACKING**<br>• Study how to track car driver's head position and orientation from low-quality traffic video<br>• Develop semi-automatic video annotation software with Viola-Jones frontal face detector for training object tracking algorithms<br><br>**FACIAL REENACTMENT**<br>• Implement real-time face tracking algorithms on iOS devices<br>• Train a facial reenactment model using GANs and port it to iOS devices |

## TEACHING EXPERIENCE

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| Jan 2016 to Jan 2017<br>Madison, WI | *Tutor* at **Greater University Tutoring Service**<br>• Instruct peers one-on-one in programming and math problems for three hours weekly<br>• Lead review sections to help students study for calculus exams |
| Nov 2016 to May 2017<br>Madison, WI | *Tutor* at **Division of Diversity, Equity and Educational Achievement**<br>• Mentor undergraduate students in DDEEA programs for Data Structure course<br>• Design two worksheets and give detailed solutions every week |

## Poster Presentation

**Z. Wang**, T. Heaster, Y. Quan, A. Walsh, M. Skala, A. Gitter. Using Transfer Learning to Classify Breast Cancer Cells with Fluorescence Imaging. (Presented in UW-Madison Undergraduate Symposium 2018)

## Manuscript in Preparation

**Z. Wang**, A. Walsh, M. Skala, A. Gitter. In preparation. Label-free T cell Classification.

## Awards and Grants

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

## Course Projects

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| Spring 2018 | **Group Assignment Optimization** <br> Instructor: Laurent Lessard <br><br> • Course project for Introduction to Optimization, selected as the best project <br> • 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** <br> Instructor: Hyunseung Kang <br><br> • Course project for Applied Regression Analysis, won the in-class Kaggle Challenge <br> • Use Yelp comment texts to predict the categorical rating <br> • Explore multiple models including neural network with GloVe word representation |

## Programming Skills

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| Languages: | Python, R, Julia, Swift, LaTeX, C++, C, Java, SQL |
| Packages: | Tensorflow, Keras, scikit-learn, OpenCV, CellProfiler |