





# JENNIFER KADOWAKI

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 jkadowaki

## Skills

### Machine Learning Frameworks

- PyTorch
- Keras
- scikit-learn

### Prog. Languages & Software

#### Everyday Workflow:

- Compute Clusters
- Docker & Singularity
- GNU/Linux
- $\text{\LaTeX}$
- Python (e.g., bokeh, Jupyter Lab, matplotlib, NumPy, OpenCV, pandas, SciPy, seaborn)
- Shell Scripting

#### Occasional Usage:

- BERT
- git
- Mathematica
- MATLAB
- SQL

### Technical Knowledge

- Bayesian Statistics
- Big Data
- Containers
- Data Visualization
- Deep Learning
- Image Processing & Analysis
- Machine Learning
- Neural Networks
- Scientific & Technical Writing
- Spectral Processing & Analysis
- Statistical Analysis

### Natural Languages

- **English:** Native Language
- **Japanese:** Fluent in listening & conversing, proficient in reading & writing

## Education

Aug 2015 - May 2021 **Ph.D., Astronomy & Astrophysics**

University of Arizona

Aug 2015 - Dec 2018 **M.S., Astronomy & Astrophysics**

University of Arizona

Sep 2010 - Jun 2014 **B.S., Physics**

UCLA

**Relevant Graduate Coursework** (GPA: 4.0/4.0)

Big Data & Machine Learning (ASTRO 502), Computer Vision (CS 577), Data Mining (INFO 523), Machine Learning (INFO 521), Neural Networks (INFO 551), Statistical Methods (ASTRO 513), Statistical Natural Language Processing (CS 557)

## Employment

### Data Science Ambassador (DSA)

University of Arizona

Data Science Institute

Aug 2019 - May 2020

- Competitively selected as 1 of 2 DSAs representing the College of Science.
- Hosted & presented monthly seminars & tutorials attended by 30-40 students, postdocs, & faculty to promote data science & machine learning literacy.
- Provided consulting services and resources to help university researchers apply data science techniques in their work.

### NOAO Specialist

National Optical Astronomy Observatory

The Data Lab Team

May 2018 - Aug 2018

- Developed machine learning-based science cases on open source data to show-case Data Lab products to users.

### Graduate Teaching Assistant

University of Arizona

The Physical Universe (ASTR 170B), Cosmology (ASTR 201)

Jan 2017 - May 2018

- Presented lectures, led in-class discussions, organized physics-based experiments, graded assignments, and held office hours & review sessions for exams.

## Research

### Astrophysics Graduate Research Assistant

University of Arizona

On the Properties of Massive Ultra-diffuse Galaxies (UDGs)

Aug 2015 - present

- Developing a deep learning model to inexpensively estimate distances to  $\sim 1500$  candidate UDGs, which would save  $>630$  nights of observing on the world's largest telescopes with operations cost of \$35,000/night.
- Aggregated the largest catalog of confirmed UDGs. Conducted the 2nd largest spectroscopic survey to expand the catalog by 25%, doubling the sample of cosmologically-interesting UDGs. Performed multivariate statistical analysis to study galaxy properties & evolution.
- **Publications:** [1st Author, *ApJ* 2017], [*ApJS* 2019] [*ApJ* Accepted], [1st, *ApJ* Submitted]
- **Award:** Honorable Mention, NSF Graduate Research Fellowship (2017)

### Information Science Graduate Research Assistant

University of Arizona

Automated Model Assembly from Text, Equations, and Software

Jan 2019 - May 2020

- Developed state-of-the-art, deep learning model for equation reading and detection in research papers on arXiv.
- **Publications/Report:** [LREC 2020], [Final Report on Model Pipeline Results]

## Graduate Course Projects

### Statistical Natural Language Processing (CS 557)

- Built the [best performing model] for an in-class competition on offensive language identification based on SemEval 2019 (Task 6a) by ensembling fine-tuned Bidirectional Encoder Representations from Transformers (BERT) models. Performed within the top 10 state-of-the-art models of 104 task participants.

### Neural Networks (INFO 557)

- Built an ensemble of bidirectional GRUs, ranked 3/30 for an in-class competition on sentiment analysis of tweets based on SemEval 2018 (Task 1). [Repo].

### Statistical Methods (ASTRO 513)

- Used Bayesian analysis to reproduce the 2011 Physics Nobel Prize results. Expanded the analysis to test for bias against host galaxy masses. [Report].