

Johanna S. Karras

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EDUCATION

University of Washington Allen School

PhD Computer Science

Computer Vision and Machine Learning

Advised by Dr. Steven Seitz and Dr. Ira Kemelmacher

Seattle, WA

September 2021

California Institute of Technology

B.S Computer Science, minor in Information and Data Science

GPA 3.8/4.0, Teaching Assistant, NCWIT Collegiate Award Finalist

Pasadena, CA

June 2021

KEY SKILLS

- Computer vision expertise in deep convolutional neural networks, object detection, and tracking
- Machine learning proficiency in TensorFlow, Keras, and PyTorch
- Strong programming skills in Python, C++, C, Java, and MySQL
- Fluency in English, Finnish, Spanish, French

RESEARCH PROJECTS

Deep Neural Networks for Black Hole Imaging

Prof. Katie Bouman's Group at Caltech

Pasadena, CA

April 2020 – June 2021

- Researched the first deep neural network image reconstruction algorithms for black hole imaging.
- Showed improvement in average mean-absolute-error from $1.396e-4$ to $2.046e-5$ when compared to a state-of-the-art regularized maximum likelihood optimization method.
- Presented extended abstract and poster at the WiCV workshop at CVPR on June 19, 2021.

Dual Task Learning for Species Classification and Annotation

Final Course Project for Prof. Pietro Perona

Pasadena, CA

Spring 2021

- Developed a convolutional neural network using transfer learning for simultaneous fine-grain image classification and multi-label attributes annotation using the Caltech UC-Davis Birds 200-2011 datasets. Showed 11% improved accuracy on fine-grain attributes classification.

PIMCO/Caltech: Independent Research Project

Mentored by Prof. Adam Wierman

Pasadena, CA

October 2019 – March 2020

- Developed novel machine learning and natural language processing methods for financial forecasting in a joint PIMCO/Caltech project.

INTERNSHIPS

Streetscope Inc.

Computer Vision & Machine Learning Intern

Pasadena, CA

April 2021 – Present

- Researched and implemented deep neural networks for object detection, object tracking, and video processing solutions applied to traffic safety applications using Tensorflow and Python.

J.P. Morgan & Chase

Software Engineering Intern

New York, NY

June 2019 – August 2019

- Designed and implemented a new internal-facing web app using React and Java, supported with Jules and Gaia Cloud Platform Service.

Microsoft Artificial Intelligence & Research

Software Engineering "Explore" Intern

Bellevue, WA

June 2018 – September 2018

- Designed and implemented two new features for Cortana, a voice-controlled AI personal assistant, relating to midterm elections and real estate using machine learning, natural language processing, C, and new geospatial APIs.

AWARDS & RECOGNITIONS

- Google CSRMP 2021 (Computer Science Research Mentorship Program)
- NCWIT Collegiate Award Finalist, 2020 (National Center for Women in Computing)
- Caltech Amasa Bishop Travel Grant, 2020
- Caltech Summer Undergraduate Research Fellowship, 2020