

Johanna S. Karras

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in [johannakarras](#)

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RESEARCH INTEREST

My research interests lie in at the intersection of computer vision and art. I am currently working on generative AI for image and video synthesis at the Graphics and Imaging Lab (GRAIL) at UW.

EDUCATION

University of Washington Allen School

PhD Computer Science

Graphics, Computer Vision, and Machine Learning

Co-advised by Dr. Steve Seitz, Dr. Ira Kemelmacher-Shlizerman, and Dr. Brian Curless

Seattle, WA

September 2021 - Current

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

September 2017 - June 2021

KEY SKILLS

- Computer vision, deep learning, computational photography, object detection, and object 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

Fashion Video Synthesis from Still Images

Advised by Prof. Ira Kemelmacher-Shlizerman (UW), Dr. Ting-Chun Wang (NVIDIA)

- Currently researching cross-attention based high-resolution video synthesis from one or more fashion images.
- Anticipated submission to Siggraph 2023.

Seattle, WA

Current

Deep Neural Networks for Black Hole Imaging

Advised by Prof. Katie Bouman

- Researched the first deep neural network image reconstruction algorithms for black hole imaging.
- Showed improvement in average mean-absolute-error 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.
- See on project on [Github](#).

Pasadena, CA

April 2020 - June 2021

Dual Task Learning for Species Classification and Annotation

Final Course Project for Prof. Pietro Perona

- 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.
- See project on [Github](#).

Pasadena, CA

March 2021 - June 2021

PIMCO/Caltech: Independent Research Project

Mentored by Prof. Adam Wierman

- Developed novel machine learning and natural language processing methods for financial forecasting in a joint PIMCO/Caltech project. Achieved above state-of-the-art prediction accuracy.

Pasadena, CA

October 2019 - March 2020

PROFESSIONAL EXPERIENCE

Streetscope Inc.

Computer Vision & Machine Learning Intern

Pasadena, CA

April 2021 - September 2021

- Researched and implemented state-of-the-art deep neural network architectures for object detection, object tracking, and video processing 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, in order to monitor the testing and integration of internal software projects.

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.

DIVERSITY, EQUITY, & INCLUSION

UW K-12 CS Outreach Program

March 2022 – Present

- Developed and presented computer science workshops for middle and high-school students in historically underprivileged middle and high schools around Seattle.

UW CSENext Mentorship Program

April 2022

- Mentored undergraduate computer science students from historically underrepresented backgrounds for a three-week long original research project, in order to expose these students to computer science research and graduate school.

AWARDS & RECOGNITIONS

- UW Reality Lab – Amazon Fellowship, 2022
- 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