

Benjamin P. Danek

Computer Science Graduate researcher interested in developing Artificial Intelligence to address disparities in healthcare.

Education

University of Illinois Urbana Champaign (UIUC)
Master of Computer Science
GPA: 3.8/4.0

Champaign IL, USA
Aug 2022 - present

Arizona State University (ASU)
Bachelor of Science in Computer Science
GPA: 3.7/4.0

Tempe AZ, USA
Aug 2017 - May 2021

Research Interests

I am interested in researching AI for medicine, Algorithmic fairness, and Trustworthy AI.

Work History

Machine Learning Research Scientist

Center for Alzheimer's and Related Dementias, National Institute of Aging, NIH

- Federated Learning for Parkinson's Disease diagnosis using multi-modality patient data
- Large Language Models to enable collaborative biomedical research

Bethesda, MD USA
August 2023 - **present**

Graduate Research Assistant

Sunlab, University of Illinois at Urbana-Champaign

- Conduct Machine Learning research applied to healthcare, pharmaceutical, and biomedical fields.
- Research areas include federated Learning, generative modeling, clinical trial optimization

Urbana, IL USA
May 2023 - **present**

Software Engineer

Errors Inbox Product Team, New Relic Inc.

The Errors inbox product distills petabytes of server logs into actionable devOps insights.

- Full Stack Software engineer on the Errors Inbox product team
- Function on team
 - Feature design & implementation,
 - Infrastructure design & management,
 - Independent management of product SLAs with and on-call rotation

Remote, USA
Aug 2022 - May 2023

San Francisco, CA USA
Jun 2021 - Aug 2022

Undergraduate Research Assistant

Design Informatics Lab, Arizona State University

Tempe, AZ USA
Dec 2018 - May 2020

- Conduct Deep Learning research in the domain of perception, reinforcement learning autonomous driving
- Main Project: Adversarial examples on autonomous agents trained through end-to-end reinforcement learning
- Recipient of the Fulton Undergraduate Research Initiative Award
 - Spring 2019, Fall 2019

Internships

Intramural Research Training Award Recipient

National Institute of Health, Center for Alzheimers and Related Dementias

- IRTA Fellowship
- Federated Learning for Parkinson's Disease diagnosis using multi-modality patient data

Bethesda, MD USA
May 2023 - July 2023

Software Engineering Intern

Synthetics Product Team, New Relic Inc.

The synthetics product activates clusters of load generators around the world to mimic web user web traffic.

- Develop internal tooling for managing customer shard distribution
- Resolve Customer UI and Backend bugs
- React, Typescript, Java, Docker, Selenium, Bash

Remote, USA
May 2020 - Aug 2020

Hardware Engineering Intern

ALTUS Product Family, Lam Research Corporation

Build prototype for predictive maintenance system in semiconductor manufacturing fab.

- time series classification, vibrational analysis

Develop automated defect classification system for semiconductor manufacturing equipment based on Deep Learning models

- Deep Computer Vision (AlexNet) classifier
- Establish python programming standards within CVD/ALD hardware group

Fremont, CA USA
June 2019 - Aug 2019

Fremont, CA USA
June 2018 - Aug 2018

Hardware Design Intern

Metralight Inc.

Develop prototype for automating printed circuit board manufacturing

- CNC Mill, SolidEdge CAD
- Soldering

Liberecký kraj, Czech
Republic
June 2017 - Aug 2017

Projects

PyHealth, Sunlab UIUC

Jan 2023 - present

Core Developer

PyHealth is an Open Source python package built for Healthcare Scientists to make Deep Learning and Dataset management more accessible [\[docs\]](#).

As a core contributor at the PyHealth project, I have led the development of the following modules:

- CI using github actions
- Unit tests for Dataset processors
- (WIP) Implement module for using published work for auto regressive Synthetic Data generation

(Python, pytorch, numpy, scipy, tensorflow, pytest)

Accepted as a KDD 2023 Tutorial Track

Anto, Pesticide Screener

Dec 2021

Project Lead

Developed a pesticide screening software system that processes a corpus of pesticide usage reports submitted to the state of California, populates a SQL database with the report contents, and provides a UI for approximating an individual's pesticide exposure based on their geography.

(Google Cloud Platform, Postgres, Python, Typescript, React, NodeJS)

DRIFT, Computer Science Capstone Project

May 2020 - Dec 2020

Project co-lead, with Z. Basque, W. Al-Zahir, N. Smith

Co-lead of a Continuous Integration tool used for automated vulnerability detection on the PX4 open-source flight controller using Google AFL. This work allows faster, safer open source external contributions to the PX4 project. Work done in partnership with Dr. Jnaneshwar Das' Distributed Robotics Exploration and Mapping Systems Lab (DREAMS).

(Amazon Web Services, Python, Javascript, React, Bash)

Adversarial Examples in end-to-end Reinforcement Learning Controllers, Fulton Undergraduate Research Initiative (FURI)

Research Lead under Associate Professor Yi Ren

Tempe, AZ USA
Jan 2019 - Dec 2019

In this work we investigated characterizing the abilities of adversarial perturbations embedded in the agent environment. The RL agent is an end-to-end controller implemented with Deep Q-Learning. Results of the project indicated that the end-to-end controllers could be manipulated using adversarial perturbations. Presented this work at the FURI symposium poster session in Spring 2019, and Fall 2019.

Publications

C. Yang *et al.*, "PyHealth: A Deep Learning Toolkit for Healthcare Applications," in *Proceedings of the 29th ACM SIGKDD Conference on Knowledge Discovery and Data Mining*, Long Beach CA USA: ACM, Aug. 2023, pp. 5788–5789. doi: [10.1145/3580305.3599178](https://doi.org/10.1145/3580305.3599178).

Awards and Achievements

- Intramural Research Training Award National Institute of Aging, NIH May 2023
- 3rd Coast Augmented Intelligence for Health Bowl, 2nd place May 2023
- Dean's List 2017 Fall, 2018 Spring, 2019 Spring, 2019 Fall
- ASU Academic Achievement Scholar Aug 2017 - May 2021
- Golden State Award Aug 2017 - May 2021
- ASU Summer 2020 Award May 2020 - Aug 2020
- Fulton Undergraduate Research Initiative (FURI) Jan 2019 - December 2019

Volunteering

- Say No to Alcohol Group (snTAG) Minnesota Chapter Minneapolis, MN USA
- FIRST Lego League Coach, Chicanos Por La Causa Phoenix, AZ USA
- Animal Assisted Happiness, Sunnyvale, CA USA