Patrick Soga

psoga117@gmail.com — https://ajb117.github.io

Education

University of Notre Dame Aug 2018 – Jan 2023
B.S. Computer Science, B.A. Philosophy - 3.85/4.0 *Notre Dame, IN*

Papers

1. Patrick Soga and David Chiang. Bridging graph position encodings for transformers with weighted graph-walking automata. 2022 (under review at TMLR)

2. Steven J. Krieg, William C. Burgis, Patrick M. Soga, and Nitesh V. Chawla. Deep ensembles for graphs with higher-order dependencies. 2022 (under review at ICLR 2023)

Research Experience

Notre Dame Department of Computer Science February 2022 – December 2022
Undergraduate Research Assistant *Notre Dame, IN*

- Developed a novel graph automaton-based positional encoding for graph transformers with Professor David Chiang.
- Assisted in developing an ensemble-based graph neural network architecture for higher-order networks (HONs) under Professor Nitesh Chawla.

REU at Notre Dame June 2020 – August 2020
REU Participant *Remote*

- Participated in NSF-funded research project under Professor Jane Cleland-Huang for developing software for guiding drones assigned to emergency response missions.
- Trained weather classification models for video provided by drones.

Work Experience

Lucy Family Institute for Data and Society June 2021 – May 2022
Software Developer *Notre Dame, IN*

- Worked under Professor Nitesh Chawla to build apps for HIMFG, a premier hospital in Mexico City, Mexico.
- Wrote web and mobile apps for gathering and managing patient medical information and assessing cancer patient risk.
- Human-computer interaction paper in-progress.

FloVision Solutions July 2021 – March 2022
ML & Software Engineer *Remote*

- Wrote Python scripts and infrastructure for ML ops, pipelining annotation data and deploying inference jobs with Docker using Google Cloud Platform.
- Worked on tuning CNN architectures using transfer learning techniques for recognizing and classifying images of food with TensorFlow for food waste reduction.

Million Marker February 2021 – May 2021
Software Engineering Intern (part-time) *Palo Alto, CA*

- Developed OCR functionality using Google's Tesseract and Amazon's Textract for extracting ingredients from product labels.

RJ Reliance December 2020 – February 2021
Software Development Intern *Remote*

- Wrote Python scripts to generate random datasets detailing job requisitions, job applications, and other data pertaining to HR according to weights assigned to parameters such as ratio of managers to workers, propotions of worker ages, etc. for showcasing core company products.
- Designed, implemented, and deployed a web frontend and corresponding REST API to interface with a MongoDB database.

Volunteering

CS for Good August 2019 – August 2020
Non-Profit Service Project, Team Member *South Bend, IN*

- Worked in a team of 4 to create a database and dashboard for Guate Te Incluye, a non-profit organization helping recently deported Guatemalan migrants reintegrate into the labor force.
- Wrote API endpoints in NodeJS for managing data of over 1100 workers.

Skills

Programming: PyTorch, Keras, Python, C, Dart, JavaScript, TypeScript, Bash, PostgreSQL, ReactJS, Angular, AngularJS, NodeJS, Flask

Software & Tools: Git, Ubuntu, Google Cloud Platform, Amazon Web Services, Google Firebase, LaTeX, Vim

Awards, Distinctions, & Activities

- iTREDS Scholar: competitive program for training students in data science for social good
- Building Bridges peer mentor (2021-2022): mentorship program for demographically underrepresented first-year students in computer science
- Silicon Valley Semester (Spring 2021): 1 of 27 selected computer science majors at Notre Dame to work a part-time internship at a tech startup in Palo Alto, California concurrently with coursework
- Philosophy club president (Fall 2020): recruited students and organized and led a reading group in Eastern philosophy
- Dean's List (2018-2020)

Miscellaneous

- Citizenship: U.S.A.
- Languages: English (native), Japanese (basic)