Patrick Soga

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Education

University of Notre Dame **Aug 2018 – Dec 2022**
B.S. Computer Science, B.A. Philosophy - 3.85 GPA *Notre Dame, IN*

Papers

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

Research Experience

Notre Dame Department of Computer Science **June 2022 – Present**
Undergraduate Research Assistant *Notre Dame, IN*

- Developing a novel graph automaton-based positional encoding for graph transformers with Professor David Chiang. Paper in-progress.
- Assisted in developing an ensemble-based approach to applying neural methods for higher-order networks (defined here: https://arxiv.org/abs/1508.03113) under Professor Nitesh Chawla.

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

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

Work Experience

Interdisciplinary Center for Network Science and Applications (iCeNSA) **June 2021 – May 2022**
Undergraduate Software Developer *Notre Dame, IN*

- Worked under Prof. Nitesh Chawla to build apps for HIMFG, a premier hospital in Mexico City, Mexico.
- Wrote a web app for uploading and managing patient medical information and assessing cancer patient risk.
- Wrote a cross-platform mobile application with Flutter for symptom submission for detection of fever and neutropenia in child cancer out-patients.

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 using transfer learning to tune CNN architectures for recognizing and classifying images of food with Tensorflow for food waste reduction.

Million Marker **February 2021 – May 2021**
Software Engineering Intern *Palo Alto, CA*

- Developed OCR functionality using Google's Tesseract and Amazon's Textract for extracting ingredients from product labels.
- Wrote algorithms for extracting specific ingredients from OCR-retrieved text and storing them in an S3 bucket via AWS Lambda functions.

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.

Service

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, Julia, Bash, PostgreSQL, ReactJS, AngularJS, NodeJS, Flask

Software: Google Cloud Platform, Amazon Web Services, Google Firebase, Ubuntu

Awards, Distinctions, and Activities

- Dean's List: top 30% of undergraduate students within major (2018-2021)
- iTREDS Scholar: competitive program for training students in data science for social good
- Philosophy club president (Fall 2020)

Miscellaneous

- Citizenship: United States of America
- Languages: English (native), Japanese (basic)