

Bayard Walsh

(415) 988-1876 | bkwalsh@uchicago.edu | <https://github.com/bkwalsh>

EDUCATION

The University of Chicago

Bachelor of Arts in Computer Science: Specialization in Machine Learning, Minor in Architectural Studies
GPA: 3.77 / 4.0

Chicago, IL
September 2021 – June 2024

The University of Southern California

Bachelor of Science in Economics Thematic Option Honors English Program
GPA: 3.81 / 4.0

Los Angeles, CA
August 2020 – May 2021

TECHNICAL SKILLS

Languages: Python (Pandas, NumPy, PyTorch, Keras, scikit-learn, matplotlib, OpenCV), C, SQL, ArcGIS, R, JavaScript, Java, OCaml, Haskell, Rust, and LaTeX

Relevant Coursework: Deep Learning Systems, Computational Linguistics, Introduction to Computer Vision, Mathematical Foundations of Machine Learning, Autonomous Laboratories, Data Science Clinic, Discrete Mathematics, Theory of Algorithms, Introduction to Complexity Theory, Introduction to Database Systems, Programming Languages, Functional Programming, Introduction to Computer Systems, Introduction to Computer Science I and II, Calculus

Projects: Modified Attention with Non-Linear Kernels and its Impact on Few-Shot Learning (<http://tinyurl.com/nonlinear-kernel>): Retrained GPT-2 with periodic, gaussian, and polynomial kernels in attention architecture and measured benchmarks in performance in tasks ranging from text generation to logical reasoning
A Deep Learning Approach to Abusive Language and Hate Speech Detection for the Javanese Language (<http://tinyurl.com/javanese-hate-speech>): Adapted generative models with feed forward neural network to perform sentiment analysis and fine-tuned Javanese language models to analyze code-mixed data
DETR Fine-Tuning (<https://tinyurl.com/DETR-finetune>): Fined-tuned DETR, achieving benchmark performance for Instance-Level Semantic Labeling Task

EXPERIENCE

The University of Chicago Department of Medicine

Machine Learning Project Lead

Chicago, IL
December 2023 – June 2024

- Advised by Bohdan Khomtchouk, evaluating disparities in Social Determinants of Health for cardiovascular risk of Native Hawaiian/Pacific Islanders
- Responsible for assigning tasks to team of 4 researchers and overseeing the implementation of the data pipeline, model and visualizations pieces of the project
- Wrote grant for project funding for NOT-HL-23-110 and presented weekly deliverables and project updates to the lab for feedback and discussion
- Developed aggregator and mapping utils for loading county census data in the training pipeline of a Recurrent Neural Network (RNN) and visualizing results
- Trained the RNN to learn the weights of the importance of Social Determinants of Health to analyze diverse socio-economic health factors at the county level

Fermi National Accelerator Laboratory

Machine Learning Research Assistant

Chicago, IL
December 2023 – March 2024

- Advised by Giuseppe Cerati at FermiLab analyzing Liquid Argon Time Projection Chambers through Graph Neural Networks
- Enhanced computing efficiency and accuracy of the interaction point decoder by investigating diverse network configurations and hyperparameter values
- Evaluated project outcomes on MicroBooNE open data sets to ensure optimal performance and validated improvements in interaction point decoding

Base Operations

Data Science Intern

Washington, DC
January 2023 – December 2023

- Built engine to enrich map database through querying census data and calculating overlapping shapes to define city and neighborhood layers
- Created Unit tests for ETL data pipeline, contributed to classification model, and verified quality of data sources
- Designed statistical models to gain insights about the data, visualizing key metrics and delivering findings through internal reports
- Performed exploratory data analysis to identify trends and relationships in crime data for customers

Morningstar, Inc.

Software Engineer Intern

Chicago, IL
June 2023 – August 2023

- Created data aggregation, analysis, and visualization models for Index Analytics Engine under Senior Software Engineer Adam Cresse
- Implemented features for Morningstar Analytics Lab including anomaly detection, financial generative data, and data dimension reduction models
- Managed and updated legacy data pipelines and Internal Content distribution system to increase future data science usability

The University of Chicago Department of Computer Science

Computer Science Research Assistant

Chicago, IL
January 2022 – June 2023

- Advised by Professor Sarah Sebo in the Human-Robot Interaction lab investigating the role of robotics in pedagogy and collaborative learning
- Developed project on robotic facilitation of peer-to-peer interactions with a knowledge gap and compiled a database of literature on robots in education
- Interviewed 50 public school teachers, analyzed interviews through NLP to find underlying teacher needs for informing optimal design for robot behavior

The University of Chicago Booth School of Business

Data Science Research Assistant

Chicago, IL
January 2022 – September 2022

- Advised by Professors Emanuele Colonnelli and Shai Bernstein in joint Booth-HBS project on Venture Capital, Web3, and Crypto
- Scraped through GitHub data and collected information on crypto developers and documented distinguishing features in the Web3 community
- Determined metrics on blockchain layering and depth within the repository, indicating underlying Web3 Architecture

INTERESTS

Avid Backpacker, Triathlon Athlete, Live Music Enjoyer, Bridge Player, and Sustainable Design Admirer. My favorite books are Gödel, Escher, Bach and Antifragile.