

Jonathan Dullerud

504 W Oregon St. ■ Urbana ■ IL ■ 61801 ■ jed3@illinois.edu ■ (650) - 575 - 1452

Education

University of Illinois at Urbana-Champaign

Urbana, Illinois

B.S. Computer Science, Minor Mathematics **3.85 GPA**

December 2024

Coursework: Data Structures, Algorithms, Computer Vision, Computational Geometry, Systems Programming, Distributed Systems, Randomized Algorithms, Interactive Computer Graphics, Computer Architecture

Activities and Awards: Dean's List, Bouldering Club, Smash Melee Club, Cello, Poker Club

Experience

Department of Computer Science, UIUC

Champaign, IL

Advisor: Dr. Sarel Har-Peled

Computational Geometry Research Intern

Summer 2024

- Studied advanced data structures and algorithms such as Van Emde Boas Trees, Fusion Trees, Cartesian Trees, q-heaps, Radix Sort and related ideas with the goal of optimizing 2D orthogonal range-searching
- Designed data structures and algorithms to speed-up emptiness queries in the unit square

BlackEdge Capital

Chicago, IL

Quantitative Trading Intern

Summer 2023

- Researched options hedging with a focus on getting the best price for a hedge in the Treasuries futures market
- Utilized pandas, sklearn and statsmodels to analyze trades which contributed to hedges that resulted in a high cost
- Used an Autoregressive Integrated Moving Average (ARIMA) model to predict trades with a high hedge cost
- Resulted in an expected 10% deduction on hedge cost compared to previous prediction model

PreVeil

Boston, MA

Software Development Intern

Summer 2022

- Worked with Red Hat Package Manager to build a package to create a Rocky Linux distribution of the PreVeil app
- Implemented Click Python package to create a command line interface to allow file synchronization and encryption
- Ensured functionality on Rocky Linux by using a Docker image for containerization
- Resulted in a Linux distribution of the PreVeil application used by Mississippi State University

Department of Industrial and Systems Engineering, UIUC

Champaign, IL

Advisor: Dr. Ramavarapu Sreenivas

Computer Vision Research Intern

Summer 2019

- Integrated OpenVino Toolkit with a Raspberry Pi to make a facial and posture recognition machine to track different entities in camera view
- Applied Intel Neural Compute Stick 2 to train a neural network that implements bounding boxes to distinguish objects
- Instructed Raspberry Pi's to communicate wirelessly to build a network of motorized cameras that could communicate when to switch based on which camera captured moving objects

Projects

Imagenette Adversarial Attack Network

Spring 2022

- Trained a neural network on Imagenette, a small subset of ImageNet
- Applied Fast Gradient Sign Method and Iterative Gradient Sign Method to issue attacks which affect image classification
- Administered SafetyNet, a defensive network, to train the neural network account for image noise from adversarial attacks

Spotify Playlist Analysis

Fall 2021

- Parsed Spotify playlist data in Python to show correlation between artists in playlists
- Utilized Dijkstra's Algorithm to find what artists are in playlists with other artists
- Employed Betweenness Centrality algorithm to determine what artists are least genre specific

Skills

Languages: C++, C, C#, Java, Python, JavaScript, SQL, Go

Data Science: PyTorch, Scikit-learn, Pandas, MatLab

Related Technologies: Git, Jupyter, AWS, ReactJS, NodeJS, PostgreSQL, HTML, .NET, \LaTeX