CHARLIE DEDINSKY

STUDENT

Employment

University of Minnesota - Education — Minneapolis, MN
Undergraduate Teaching Assistant — Jan. 2023 to Current

• Served as a teaching assistant for an introductory functional programming course in OCaml, covering advanced topics like functors, monads, higher-order programming, lexing, parsing, and algebraic types.
• Instructed students on leveraging induction techniques to validate the correctness of their functional code implementations.
• Assisted students in implementing an algorithm to automatically perform induction and prove code correctness.

Graco Inc — Minneapolis, MN
Software Engineering Intern — Sept. 2023 to Nov. 2023

• Developed a React Native app with chart integration and Bluetooth connectivity for data transfer between microcontrollers and mobile devices, enabling real-time device health monitoring.
• Enhanced data management within the React framework, fixing bugs and improving efficiency and robustness of data handling and display.
• Implemented a driver for the ADXL375 accelerometer, including initialization, read/write functions, and SPI communication, based on datasheet specifications.

Minneapolis, MN
Electrical Engineering Intern — May 2023 to Aug. 2023

• Developed and implemented a package manager using opkg for a custom Linux microcontroller, architecting its dependency structure and leveraging a locally-hosted private repository for seamless updating and upgrading functionalities.
• Designed and executed an end-to-end solution for microcontroller pin and peripheral control through a webpage; crafted the frontend using jQuery and HTML, developed the backend with BlackSheep and Python, and bridged the firmware with a custom driver, enabling live monitoring and manipulation of peripheral values.
• Engineered a robust "log displayer" that standardizes log files into a consistent object list, serving JSON outputs from backend to frontend; additionally integrated pagination and advanced filtering for tailored log viewing experiences.

Sikka Software — San Jose, CA
Full-Stack Developer Intern — May 2022 to Sept. 2022

• Constructed ReactJS modules paired with Highcharts and developed C# API endpoints in ASP.NET Core, culminating in a robust web application optimized for dental practices.
• Amplified API development efficiency sevenfold by harnessing the power of C# generics and embracing modular coding techniques.
• Integrated ADO.NET, streamlining SqlServer and MySql interactions and significantly bolstering code maintainability.

San Jose, CA
Frontend Developer Intern — Feb. 2022 to Apr. 2022

• Crafted ReactJS frontend modules, leveraging both Victory and Highcharts libraries, to visualize intricate data charts.
• Instituted frontend best practices, enhancing code performance, maintainability, and readability.

University of Minnesota - IT — Minneapolis, MN
Senior Training Mentor — Dec. 2021 to Feb. 2022

• Instructed students in effective techniques for resolving technological issues for customers.
• Oversaw the development of 10 trainees, tracking their performance and learning trajectory.

Minneapolis, MN
Service Desk Support Technican — Oct. 2021 to Dec. 2021

• Expertly resolved customer issues related to network, internet, email, account access, and computer hardware.
• Assisted customers through various channels including telephone, email, online chat, and remote hardware access.

Projects

Song feature-based Recommendation — Sept. 2023 to Dec. 2023

Developed a music recommendation engine using a fine-tuned ResNet model to encode 30-second Spotify song previews into mel spectrogram embeddings, stored in a Qdrant vector database. The system, encompassing 570,000 songs, allows users to find similar tracks through a web interface, utilizing Spotify API for data collection and a SQLite3 database for song metadata management.

Image to LaTeX — Jan. 2023 to May 2023

Developed a machine learning model using PyTorch that translates images of LaTeX math into its respective LaTeX markup, employing a fine-tuned ResNet CNN for image encoding and a transformer for output generation, achieving an accuracy of 93.2% on a dataset of 100,000 images.

Data Processing using LLMs for Microbiological Applications — Oct. 2023 to Dec. 2023

Implemented a system to extract and parse microbiological content from 5,000 academic articles using large language models, including GPT-4, LLaMA2 7B, and Phi2 (2.7B). Focused on refining prompts and few-shot learning techniques, the project enhanced model performance in data extraction, with GPT-4 showing the best results. This approach streamlined the processing and analysis of complex microbiological information.

Relevant Coursework

Advanced Machine Learning — Jan. 2022 to May 2022

Explored in-depth models of supervised and unsupervised learning, emphasizing modern machine learning's core principles. Covered key topics from SVMs and neural networks to generative models and reinforcement learning. The course honed expertise in both algorithmic applications and foundational theory.

Deep Neural Networks — Sept. 2023 to Dec. 2023

Delved into the foundational concepts and advanced techniques of deep learning, encompassing both theoretical models and practical computation. The course covered a range of topics including neural network architectures, optimization methods, and diverse applications from generative networks to deep reinforcement learning. Emphasis was placed on mastering key computational principles and applying Python for practical assignments and projects.

Contact

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Education

University of Minnesota — Fall 2020 to Winter 2023
B.S. Computer Science 2023
Minor Mathematics 2023
3.88 GPA

Skills

PROGRAMMING LANGUAGES
Python
C
C#
Java
Linux Systems
SQL
HTML
Markdown
JavaScript/TypeScript

FRAMEWORKS
PyTorch
Qdrant Vector Database
SQL Database Hosting/Management
ASP.NET Core
ADO.NET
Entity Framework Core
Flask/Blacksheep