

Benedict Tan

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TECHNICAL PROJECTS

Neural Network Library

Aug. 2023 – Sep. 2023

Python, NumPy

- Engineered a versatile and reusable neural network library from scratch, leveraging Object-Oriented Programming (OOP) principles for modular, maintainable, and extensible code.
- Achieved a state-of-the-art 97% accuracy in digit classification on the MNIST dataset, matching the performance of top multilayer perceptrons.
- Designed a flexible architecture that supports:
 - Multiple activation functions: ReLU, Sigmoid, Softmax.
 - Various cost functions: Cross-Entropy, Mean Squared Error.
- Optimized model learning by implementing model checkpointing and learning rate decay.
- Incorporated data augmentation by building image transformation functions from scratch.

LearnBook

Aug. 2022 – Sep. 2022

Ruby on Rails, JavaScript, HTML, CSS

- Created a full stack social media web application featuring CRUD functionality.
- Utilized Devise and OmniAuth gems for authorization and authentication.
- Employed Turbo Frames to emulate a single page application (SPA).
- Integrated interactive components using Stimulus JS.
- Implemented user avatars and profile banners with the Active Storage gem and AWS S3.

Chess

May 2022 – Jun. 2022

Ruby, RSpec

- Built a command-line chess game for two players.
- Focused on implementing Object-Oriented Programming (OOP) principles such as encapsulation, polymorphism, and abstraction.
- Conducted unit testing with RSpec.

To-Do List

Jul. 2021 – Aug. 2021

Java, JUnit

- Built an application to manage tasks.
- Developed a GUI using the Swing library.
- Implemented data persistence with JSON.
- Wrote unit tests using JUnit.

EDUCATION

The University of British Columbia

Apr. 2025

BSc, Computer Science

Vancouver, BC

- 83% GPA
- Scholarship: Outstanding International Student Award

SKILLS & INTERESTS

- **Skills:** Python; Ruby; Ruby on Rails; JavaScript; HTML; CSS; SQL; Java; Git
- **Interests:** Gaming; philosophy; chess; photography