

Dante Cornelius

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EDUCATION

Ontario Tech University

BSc(Hons) of Science in Computer Science

Oshawa, Ontario

Anticipated: May 2027

- Relevant Coursework: Machine Learning, Computer Vision, Web Development, Data Structures & Algorithms, Analys & Design of Algorithms, Software Design and Analysis, System Programming

EXPERIENCE

Full-Stack Developer

February 2025

Mindful Moments - HackHive 2025

Oshawa, Ontario

- Architected a mental wellness web app with a team of 3, integrating AI-driven emotion tracking (e.g., joy, sadness, stress) using **DistilBERT** and **Transformers** for dynamic feedback.
- Developed a secure **RESTful API** with **FastAPI**, **NextJS**, and **TypeScript**, implementing **JWT-based** authentication to support **1000+ users**, and managed **SQLite** with **SQLAlchemy** for optimal performance.
- Crafted a responsive frontend using **Tailwind CSS** and **Chart.js**, featuring an interactive mood logging interface and a dashboard with emotion trend analytics.

PROJECTS

Traffic Sign Detection with YOLOv8n | *Python, PyTorch, YOLOv8n, OpenCV, Google Colab*

- Spearheaded the development and training of **YOLOv8n** models on Balanced Speed Sign (4,000 images) and a subset of LISA Traffic Sign (11,000 images) datasets, achieving an impressive **93% mAP**.
- Enhanced inference accuracy by **7%** through innovative implementation of **Weighted Boxes Fusion for ensemble learning**.
- Overcame class imbalance in a 600-image dataset using OpenCV-based data augmentation, boosting mAP from **40%** to **93%**.
- Optimized model evaluation on **Google Colab T4 GPU**, achieving 30 FPS inference speed with robust mAP, precision, and recall metrics.

Music Recommendation AI | *Python, PyTorch, Scikit-learn, Pandas, NumPy, Matplotlib, Seaborn, Streamlit, Jupyter [View](#)*

- Engineered an innovative music recommendation system leveraging **Natural Language Processing (NLP)** and **sentiment analysis** to deliver personalized song suggestions based on user emotions.
- Preprocessed song features using **Scikit-learn's MinMaxScaler** and applied **KMeans clustering**, visualizing insights with **PCA** for enhanced data-driven decision-making.
- Designed and built **EmotionNet**, a custom **PyTorch neural network**, from scratch, and trained it to achieve **99%** accuracy in emotion prediction.
- Deployed an interactive **Streamlit** web app, enabling users to input emotions and receive tailored Spotify song recommendations, enhancing user engagement.

Steam Clone Web Application | *NextJS, Firebase, Tailwind CSS, NodeJS, Figma, Git, Agile*

[View](#)

- Collaborated in a 5-person **Agile** team to develop full-stack features (about, support, account pages, and user authentication) for a Steam-inspired web application, utilizing **Discord** and **GitHub** for seamless teamwork.
- Implemented secure **Firebase-based authentication** for email/password login, supporting scalable user functionality.
- Crafted a responsive, user-friendly UI with **NextJS** and **Tailwind CSS**, aligning with **Figma** prototypes to elevate user experience.
- Optimized **RESTful API** routes for efficient user data retrieval, significantly reducing page load times and improving performance.

TECHNICAL SKILLS

Languages: Python, JavaScript/TypeScript, C++, HTML5/CSS3, Java

AI/ML Tools: PyTorch, TensorFlow, Scikit-learn, OpenCV, NLTK

Frameworks/Libraries: Flask, NodeJS, ReactJS, Jupyter Notebook, NextJS, Streamlit, Tailwind CSS, jQuery

Databases: PostgreSQL, Firebase, SQLite

Developer Tools: Git/Gitlab, Github, Linux, VS Code, IntelliJ, pgAdmin