Will Collins

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Education

University of Michigan — Ann Arbor, MI
Bachelor of Science in Computer Science | GPA: 3.5/4.0 — *Aug. 2021– May 2025*

Program Emphasis
Michigan Curriculumn taught in C++

Experience

Software Engineer Intern — May 2024 - Aug 2024
Invenergy — *Chicago, IL*

- Developed full stack web app using **Python, ReactJS**, **Django**, & **Docker** to implement an optimization algorithm using **GLPK** & **Matplotlib** to calculate optimal cost & energy parameters for hydrogen production
- Created a webscraper using **BeautifulSoup** and **Pandas** to extract over 400,000 records of Interconnection Queue Data from 50 different sources, managing a **MySQL** database to match Queue Positions with Substation IDs
- Led a ML group to develop & train a Gen AI model on internal data for transmission, wind & solar development

Software Engineer Intern — May 2023 – Aug 2023
Aleysian — *Chicago, IL*

- Built a B2C Middleware connector REST API using **Flask, Python**, **OAuth 2.0** and a **JavaScript** frontend, automating connection between companies PIM & storefront app, saving Aleysian 100k annually
- Engineered a project to develop a backend using **Apex** and a user-friendly UI with **JavaScript**, automating a client's business process and integrating it into their CRM, resulting in a $20k profit
- Implemented custom lead assigner using **Apex** to distribute leads to sales representatives based on specific criteria

Projects

AI Study Scheduler | *Python, Flask, ReactJS, PostgreSQL, AWS* — June 2024

- Developed a full-stack AI study scheduler optimizing students' weekly academic, social, and personal activities
- Created backend with **Python**, **Flask**, & **PostgreSQL** prioritizing tasks by time, importance, prereqs & difficulty
- Built frontend with **ReactJS** & **CSS** to provide a user-friendly interface for inputting tasks & viewing calendar
- Integrated Google Calendar API, allowing users to seamlessly export their optimized schedule to google calendar
- Conducted comprehensive testing using **PyTest** for backend services and Postman API for endpoint verification

GenAI Document Analyzer | *OpenCV, Pytesseract, Python, HuggingFace, OpenAI API* — July 2024

- Developed ML powered app allowing users to upload PDFs or screenshots of documents to extract key information, including summarization, topic-based summaries, key concepts, & prerequisites using a **Python** backend
- Applied image preproccessing with **OpenCV** to improve note images by reducing noise, adjusting contrast & skew
- Utilized **Pytesseract** for Optimal Character Recognition (OCR) to accurately extract text from processed images
- Leveraged ML models **SentenceTransformer**, **BERTopic**, & **KeyBERT** for topic & keyword extraction

AI News Aggregator | *News API, OpenAI API, HuggingFace, Python* — Aug 2024

- Created a GenAI news aggregator enabling users to select topics & input commands to receive an unbiased article
- Utilized the **News API** to fetch most recent articles from relevant news sources ensuring comprehensive coverage
- Used **Hugging Face Transformers** for article summarization & sentiment analysis improving quality & relevance

Pokemon Mapping Game | *C++* — Nov 2023

- Engineered a mapping system using **C++** to minimize path taken to locate Pokemon on an xy plane
- Optimized heuristic algorithms to solve Traveling Salesperson Problem (TSP) with solutions no-worse than 5% from optimal for up to 100,000 coordinates with worst-case time complexity of $O(n^2)$
- Developed a branch and bound algorithm to give optimal solution for TSP in less than 5 seconds

Technical Skills

Languages: C/C++, Python, ReactJS, SQL (Postgres, MySQL), JavaScript, HTML/CSS, Apex
Frameworks: React, Flask, Django, TensorFlow, PyTorch
Developer Tools: Git, Docker, VS Code, Visual Studio, Xcode
Libraries: pandas, NumPy, Matplotlib, BeautifulSoup, Requests, SQLAlchemy