Brayden L. Pettigrew

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EDUCATION

The Pennsylvania State University · May 2025
Bachelor of Science in Computer Science · *University Park, PA*
GPA: 3.91
Relevant Coursework: Data Structures and Algorithms, Operating Systems, Computer Organization and Design, Database Management Systems, Discrete Mathematics

WORK EXPERIENCE

Penn State Mushroom Research Center · April 2024 – Present
Full Stack Software Engineer / Lead Mobile App Developer · *University Park, PA*
- Led the development of the Cropsmarts React Native app for efficient data input and interpretation by mushroom farmers.
- Utilized Node.js and Express.js to implement JWT authentication and handle requests from the mobile application.
- Enhanced the application by integrating a new data input feature, increasing the average input speed by 52%.
- Accelerated the development of the mobile app, achieving over a 5x increase in progress since joining the team.
- Enhanced the overall security of the Cropsmarts website by implementing auto-logout features using JavaScript.
- Developed a feature to calculate correlation coefficients between agricultural inputs and farm efficiency metrics, utilizing OpenAI's API for user-friendly interpretation of results.

SlideSmart · August 2024 – Present
Full Stack Software Engineer · *University Park, PA*
- Led a team of 3 in the Nittany AI Challenge, conducting 10+ meetings, setting milestones, and ensuring collaboration.
- Designed SlideSmart, a tool built with Next.js to enhance PowerPoints with supplementary resources and videos.
- Utilized Azure OpenAI and the YouTube Data API to provide relevant enhancements to slides and improve engagement.
- Created interactive designs with Figma and developed prototypes to gather user feedback and enhance the user interface.
- Integrated Firebase for user authentication and storing user study guides, allowing users to save and share them with others.

PROJECTS

Sushi Restaurant Web App · August 2024 – December 2024
- Built a full-stack web app with React, Node.js, and MySQL for customer orders and employee management.
- Secured user data for 100+ accounts with bcrypt and implemented role-based access control to restrict unauthorized actions.
- Developed a responsive UI with styled-components, axios, and an Express.js backend using mysql2.
- Designed a database with ER modeling, creating 8 normalized tables and 30+ SQL queries to streamline data management.

Food Vision Mini · July 2024 – August 2024
- Engineered and fine-tuned an EfficientNetB2 feature extractor model for food classification with PyTorch.
- Achieved a high prediction accuracy of 96.88% through thorough training, validating, and testing the model.
- Visualized model performance and results using Matplotlib, creating informative plots to analyze accuracy and loss.

Bella Vita Mobile App · May 2024 – July 2024
- Developed a family-based social media app with core social media features using React Native, JavaScript, and Firebase.
- Integrated Firebase Realtime Database, Cloud Storage, and Firestore for efficient data management and real-time updates.
- Received positive feedback from 11 users who preferred using Bella Vita for its ease of use and superior functionality.

Multi-threaded Communication Channel Project · February 2024 – March 2024
- Developed a multi-threaded communication channel library in C, enabling inter-thread communication.
- Utilized mutexes and condition variables for thread synchronization, ensuring thread safety.

Memory Management Project · January 2024 – February 2024
- Implemented a custom memory management system in C, including memory allocation, reallocation, and free functionalities.
- Enhanced performance and organization with an embedded segregated linked list structure and footer optimizations.
- Eared a perfect score of 100/100, surpassing the class average of 41.9/100 and demonstrating exceptional proficiency.

EXTRAS

Skills: Python, SQL, C, JavaScript, TypeScript, HTML, CSS**,** AJAX, Git, React, React Native, Firebase, PyTorch, Next.js, Azure
Certifications/Awards: React Native via Udemy, PyTorch via Udemy, Penn State Provost Award, Dean's List (5 Semesters)
Organizations: Google Developer Student Club, Nittany AI Student Society