Markus Hoehn

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Education

Kansas State University Fall 2022 - Present
Concurrent Enrollment *Manhattan, Kansas*

- **Currently Taking:** Abstract Algebra I (Grad), Applied Mathematics (Grad), Deep Learning (Grad)
- **Taken:** Real Analysis, Complex Analysis (Grad), Data and Program Structures (C#), Algorithm Analysis

Manhattan High School Expected Spring 2025
High School Diploma (GPA: 4.96 / 4.00) *Manhattan, Kansas*

Experience

Kansas State University Fall 2024 - Present
Research Assistant *Manhattan, KS*

- Developing a vision detection system using YOLO architecture to autonomously navigate an AI racer car, training the model with data generated from the CARLA simulator.
- Building crash severity prediction models, classifying crashes (minor, serious, fatal) based on road segment characteristics using deep learning and traditional methods.

Kansas State University Fall 2023 - Present
Mathematics Paper Grader *Manhattan, KS*

- Graded assignments for upper-level courses, including Honors Calculus with Linear Algebra, Discrete Mathematics, and Matrix Theory, providing detailed feedback.

Projects

Sign Language Learning Tool (Hack KU 2024) | *Flask, TensorFlow, Keras, MediaPipe, OpenCV*

- 3rd Place Winner in Themed Track at Hack KU 2024.
- Developed a web application that detects and translates over 100 sign language gestures in real-time using a browser-based camera feed, leveraging AI models with MediaPipe and OpenCV.
- Posted a YouTube video of the project, which has garnered over 188,000 views and 20,000 likes, receiving highly positive feedback.

Spotify to Accelerometer Linking (Hack K-State 2023) | *Flask, Spotify API, Accelerometer*

- Awarded ”Best Use of Google Cloud” and received Honorable Mention for ”Best Overall Hack.”
- Built an app that dynamically adjusts Spotify music tracks based on the runner’s cadence, enhancing performance and motivation through real-time energy matching using phone accelerometer data.

Fish Tracker (HackSMU VI) | *Python, YOLO, Tkinter, Arduino*

- Developed a dashboard that tracks fish movement patterns, analyzes regions of interest, and monitors water metrics such as temperature and clarity, providing real-time data through YOLO vision detection and Arduino sensors.

Awards

National Finalist - Python Programming | *National Leadership Conference, BPA (2024)*

- Ranked in the top 10 nationally in Python Programming at the BPA National Leadership Conference.

State Champion - C# Programming | *Kansas State Leadership Conference, BPA (2024)*

- Achieved first place in the C# Programming competition and qualified for nationals.

2x National Qualifier - Python Programming | *National Leadership Conference, BPA (2023, 2024)*

- Qualified twice for the national competition in Python Programming, placing 4th and 2nd in the state conference.

Technical Skills

Languages: Java, Python, C#
Technologies: Flask, TensorFlow, PyTorch, OpenCV, MediaPipe
Concepts: Artificial Intelligence, Machine Learning, Neural Networks, Computer Vision, Deep Learning
Certifications: Certiport Information Technology Specialist in Python, Certiport Information Technology Specialist in Software Development