ZACHARY DECKER

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EDUCATION

Cornell Tech (Cornell University), New York, NY — May 2025
Master of Engineering in Computer Science | GPA: 4.0

Rose-Hulman Institute of Technology, Terre Haute, IN — May 2024
Bachelor of Science in Electrical and Computer Engineering | GPA: 3.71

TECHNICAL SKILLS

Relevant Coursework:	Deep Learning, Computer Vision, Linear Algebra
Coding Language:	Python, JavaScript, C++
Operating Systems:	Windows. UNIX, Linux
Other Tools:	PyTorch, Robotics Operating System (ROS)

EXPERIENCE

DEKA, Computer Vision Engineer, Manchester, NH — Fall 2022 – Spring 2024

- Designed and implemented a localization and mapping algorithm, improving fidelity and path planning.
- Tested and optimized algorithm performance on the field with C++, ensuring real-time application functionality.
- Collaborated with cross-functional teams to integrate the terrain mapping solution into the company's broader product pipeline, enhancing the system's capabilities.

AON Devices, Machine Learning Intern, Irvine, CA — Summer 2022

- Researched and validated transformer-based models to perform motion and speech recognition tasks on wearable devices.
- Gained experience in soldering, surface mounting, and circuit layout.

PROJECTS

World Seed: Augmented 3D Environment Generation, (PyTorch) — Winter 2024 - Present
Augmenting image to image diffusion models trained in 3D video games with SLAM algorithms to increase consistency.

- Developed a pipeline to collect 6-DoF screenshots and voxel-level ground-truth block data using Minescript and Anvil.
- Modified cutting edge diffusion pipelines to integrate image to image guidance.

Course Registration Chatbot, (PyTorch, Langchain) — Spring 2024
Developed Retrieval Augmented Generation (RAG) pipeline for pretrained LLMs to provide accurate school-specific information.

- Researched and evaluated various open-source models and RAG frameworks, selecting optimal configurations to enhance chatbot accuracy and reliability.
- Tested and debugged the chatbot using real-world scenarios, ensuring robust performance and seamless integration with the university's existing registration system.

Soccer Game Reconstruction, (Matlab, PyTorch, YOLO) — Spring 2023
Reconstructing 3D information from single camera soccer game footage.

- Engineered a comprehensive pipeline leveraging MATLAB, PyTorch, and YOLO to accurately reconstruct 3D player positions from single-camera soccer footage, enhancing spatial analysis capabilities for amateur games.
- Facilitated data-driven game analysis by transforming 2D footage into actionable 3D insights, enabling coaches and analysts to better understand player dynamics and team strategies.

LEADERSHIP/ EXTRACURRICULAR ACTIVITIES

Water Cooler — Fall 2024 - Present
Building a secure, anonymous, and educational platform to connect, organize, and protect workers rights.

- Organized a small team of developers and law students, managing project timelines and coordinating team activities.
- Conducted over 15 interviews with union leaders and members to gather insights and requirements, ensuring the platform effectively addresses the needs and challenges faced by workers.

PUBLICATIONS

Ashworth, J., Lee, Y., Shen, J., Kim, E., **Decker, Z.**, & Yoder, J. (2022). **Evolution of Developmental Strategies in NK Fitness Landscapes.** *ALIFE 2022: The 2022 Conference on Artificial Life*, 59.
Studied the relationship between the evolution and development of organisms through computer simulation.

- Designed an abstract computational model integrating NK fitness landscapes with genotype-encoded developmental programs to simulate organism trajectories and developmental processes.
- Presented findings indicating evolved developmental strategies mirror biological phenomena such as sensitive periods, providing insights into the evolutionary origins of complex developmental patterns.