

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 Computer Science and Software 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
<ul style="list-style-type: none">Researched, designed, and implemented a sensor fusion, localization, and mapping algorithm.Optimized algorithm performance in C++, achieving 10x speedups in map refresh rate.Collaborated with path planning, controls, and field engineering teams to integrate computer vision solutions with the broader system architecture.	
AON Devices, Machine Learning Intern, Irvine, CA	Summer 2022
<ul style="list-style-type: none">Investigated and validated transformer-based models for motion and speech recognition on low-power wearable devices.Developed scalable data processing pipelines, ensuring clean, high-quality input for machine learning experiments.	

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.	
<ul style="list-style-type: none">Collaborating with a team of researchers to document findings, demonstrating the potential for next-gen immersive game design workflowsImplemented advanced PyTorch modules to integrate image guidance techniques, ensuring realistic 3D object placement within virtual worlds.	
Course Registration Chatbot, (PyTorch, Langchain)	Spring 2024
Developed Retrieval Augmented Generation (RAG) pipeline for pretrained LLMs to provide accurate school-specific information.	
<ul style="list-style-type: none">Engineered a Retrieval Augmented Generation (RAG) pipeline, enabling pretrained LLMs to accurately reference university-specific course data.Coordinated user testing with real students, collecting feedback to refine natural language understanding (NLU) and enhance user satisfaction.	
Soccer Game Reconstruction, (Matlab, PyTorch, YOLO)	Spring 2023
Reconstructing 3D information from single camera soccer game footage.	
<ul style="list-style-type: none">Designed a pipeline leveraging MATLAB, PyTorch, and YOLO to detect and track players from single-camera soccer footage with high precision.Implemented homography-based techniques to project 2D player positions into 3D coordinates, facilitating deeper spatial analyses.	

LEADERSHIP/ EXTRACURRICULAR ACTIVITIES

Water Cooler	Fall 2024 - Present
Building business software for unions.	
<ul style="list-style-type: none">Formed and led a cross-functional team of software developers and law students to develop labor-union-focused business tools.Presented product demos to stakeholders, highlighting potential impact on day-to-day union operations and gaining their support for pilot programs.	

PUBLICATIONS

Ashworth, J., Lee, Y., Shen, J., Kim, E., Decker, Z. , & Yoder, J. (2022). Evolution of Developmental Strategies in NK Fitness Landscapes. <i>ALIFE 2022: The 2022 Conference on Artificial Life</i> , 59.
Studied the relationship between the evolution and development of organisms through computer simulation.
<ul style="list-style-type: none">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.