

# ZACHARY DECKER

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zacharydecker.com

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

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

## LEADERSHIP/ EXTRACURRICULAR ACTIVITIES

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

## PUBLICATIONS

Ashworth, J., Lee, Y., Shen, J., Kim, E., <b>Decker, Z.</b> , & Yoder, J. (2022). <b>Evolution of Developmental Strategies in NK Fitness Landscapes.</b> <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"><li>• <b>Designed</b> an abstract computational model integrating NK fitness landscapes with genotype-encoded developmental programs to simulate organism trajectories and developmental processes.</li><li>• <b>Presented</b> findings indicating evolved developmental strategies mirror biological phenomena such as sensitive periods, providing insights into the evolutionary origins of complex developmental patterns.</li></ul>