

Charles M. Raines

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EDUCATION

Doctor of Philosophy in Computer Science (AI and Robotics) Mississippi State University GPA: 4.00/4.00	Expected May 2028
Bachelor of Science in Computer Science (Concentration in Artificial Intelligence) Mississippi State University GPA: 4.00/4.00	May 2024

RESEARCH AND PROJECTS

- Precision Agriculture Weed Detection And Treatment Using Color Segmentation and Dilation Masking
- Instance Segmentation and Spatial Graphs for Vision-Language Navigation Models in Construction Robotics (International Conference for Robotics and Automation 2025 Poster)
- Adversarial Attacks in Robotics: Evasion, Poisoning, Adversarial Patching, LiDAR Spoofing
- Autonomous Tractor System Using NVIDIA Jetson, ROS2, and Arduino
- Radiation Mapping Robotics for Environmental Safety

PROFESSIONAL EXPERIENCE

Graduate Research Assistant Department of Computer Science, Mississippi State University Conduct research and develop novel methods and algorithms in AI, Machine Learning, and Robotics. Operate and manage robots within the RAPTOR Lab at MSU while inventing and implementing cutting-edge AI technology.	May 2024 - Present
Undergraduate Research Engineer Institute for Clean Energy Technology, Mississippi State University Implement SLAM, path planning, and obstacle detection on a nuclear radiation detection robot. Utilize ROS2, Python, C++, networking, and robotics engineering while troubleshooting hardware and software issues.	May 2022 - May 2024
Information Technology Specialist Department of Mathematics, Mississippi State University Troubleshot hardware and software issues for staff and faculty, implementing scripts to resolve problems across multiple devices. Served as a subject matter expert in technology, including managing the upgrade of the department's technology lab.	April 2021 - October 2022

TECHNICAL SKILLS

Programming Languages: Python, C++, JavaScript
Machine Learning & AI: PyTorch, Deep Learning, Computer Vision, ART, Scikit-learn, Hugging Face
Robotics & SLAM: ROS2, SLAM, Vision-Language Navigation, Robotic Security
Computer Vision & Perception: OpenCV, Numpy, Semantic Segmentation, YOLO, Object Detection, Segmentation Masking
Autonomous Systems: Real-time Clustering, Path Planning, Localization & Mapping
Mathematical Foundations: Linear Algebra, Matrix Transformations, Calculus
Embedded Systems & Edge Computing: NVIDIA Jetson, Raspberry Pi, Arduino
Software Development & Tools: Git, Docker, Linux, Bash Scripting

HONORS AND AWARDS

- 2025 Goudelock Endowed Scholarship for Computer Science and Engineering
- Stephen D. Lee Scholar in Computer Science
- Summa Cum Laude Graduate
- 2x Fort Worth Region US Navy Sailor of the Quarter
- 4x NRC Meridian Sailor of the Quarter
- 2021 NRC Meridian Sailor of the Year
- US Navy Good Conduct Service Medal
- US Navy National Defense Service Medal