

Viraj Patel

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EDUCATION

Mississippi State University

Master of Science in Computer Science

- GPA: 4.0

Starkville, MS

August 2019 - August 2023

Mississippi State University

Bachelor of Science in Computer Science

- GPA: 3.72

Starkville, MS

August 2015 - May 2019

WORK EXPERIENCE

Graduate Research Assistant

Center for Advanced Vehicular Systems: AVS Research Group

- Utilized Unreal Engine 4 for creating Autonomous Vehicle Simulations
- Designed and conducted two mixed-model experiments for new research ideas
- Utilized Python to process and categorize raw experimental data for statistical analysis and future testing
- Utilized R for statistical analysis and experiment comparison and correlation
- Data Visualization and Digital Twin visualization in Virtual and Augmented Reality
- UI/UX Design and implementation for Augmented Reality

January 2020 – August 2023

Mississippi State University

TECHNICAL SKILLS

Programming Skills: C++, Python, Git, PHP, HTML, CSS (Bootstrap), javascript, mySQL, .NET, C#, R

Operating Systems: Windows, Linux (Debian)

Robotics/Autonomy: Robot Operating System (ROS), Navigation and Sensing, State Machine Logic

End User Facing Software Development: Unity 3D, Unreal Engine, Augmented and Virtual Reality

PERSONAL PROJECTS

ArUco Pose Estimation | *ROS Kinetic, Python*

- Using ROS to gather 6DOF pose estimation from a USB camera. The pose estimations gathered here were to be used in conjunction with a SLAM program to help localize the robot's position. These estimations were provided as a function extension for the NASA Robotics Mining Team at Mississippi State University for the NASA LUNABOTICS competition for fully autonomous control of the mining robot.
- Used an Intel D435i to track ArUco marker poses and relay that data to the navigation stack of the robot in order to help with localization.
- Code base and other details lie in the closed source MS State lunabotics repository.

mARble Meltdown | *Unity 3D, Augmented Reality*

[vrp56-School-Projects/Game2](#)

- A mobile Augmented Reality (AR) game developed for Android Mobile Devices where you compete with another player on the same device. The goal of the game is to get your marbles as close to the center of the target as possible.
- Handled all of the augmented reality interactions including board placement, plane tracking, UI placement and interactions, and scaling of the 3d models to ensure the physics worked properly.
- Code and descriptive information available under personal GitHub.

The Reservoir Bank Heist | *Unity 3D, Virtual Reality*

[vrp56/The-Reservoir-Bank-Heist](#)

- A Virtual Reality (VR) project developed for the Meta Quest 2. This is a project demonstrating a simple World in Miniature (WIM) navigation method.
- Handled the actual WIM implementation and which handled the swapping of the camera view when the player interacted with specific cameras. This involved using render textures to show the dynamically changing views of each camera when the player was looking at the screen of camera views inside the van and then making sure the player's view was able to swap back and forth between camera view and character view.
- Code and descriptive information available under personal GitHub.