

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 Student Researcher

Center for Advanced Vehicular Systems

January 2020 – August 2023

Mississippi State University

- ARC Project
 - * Created an Autonomous Vehicle Simulation in Unreal Engine 4
 - * Designed and conducted two mixed-model experiments for new research ideas
 - * Generated five datasets for each experiment from the raw data of 300 participants (150 per experiment)
 - * Analyzed findings in R-Studio to compare findings between the two experiments
- SimBRS II Project
 - * Data Visualization in Virtual and Augmented Reality
 - * Visualizations of Digital Twins in Augmented Reality
- BAA Visualization Project
 - * 3D Modeling of Vehicles
 - * Visualization of vehicles in Augmented Reality
 - * UI/UX Design for Augmented Reality

TECHNICAL SKILLS

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

Operating Systems: Windows, Linux (Debian)

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

Game 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. These pose estimations were to be used to autonomously operate a robot for the NASA Robotic Mining Team at Mississippi State University for the NASA LUNABOTICS competition. The pose estimations gathered here were to be used in conjunction with a SLAM program to help localize the robot's position.
- My role in this project involved using an Intel D435i to track ArUco marker poses and relay that data to the navigation stack of the robot for it to in order to help with localization.
- The code for this project is not available to share.

mARble Meltdown | *Unity 3D, Augmented Reality*

<https://github.com/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.
- My role in this project was to handle 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.
- A more in depth description can be found on the GitHub page above.

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

<https://github.com/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.
- My role was to handle 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.
- A more in detailed description can be found on the GitHub page above.