

Sabiq Khan

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Education

Georgia Institute of Technology, Bachelor of Computer Science August 2023 – Present

- Threads: Artificial Intelligence & Machine Learning, Systems & Architecture
- GPA: 3.6/4.0
- Coursework: Linear Algebra, Data Structures & Algorithms, Design & Analysis of Algorithms
- Activities: Robojackets, Wreck Racing, VGDev

Experience

Robotics Co-op, Ameren – St. Louis, MO May 2025 – Present

- Researched and developed hierarchical autonomous navigation framework for Boston Dynamics' Spot robot to traverse substations and measure voltage
- Implemented camera pose estimation to fiducials to build transformation trees between robot coordinate frames
- Applied voxelization techniques to downsample large point cloud datasets reducing memory usage and improve processing speed
- Designed and implemented a LiDAR data filtering algorithm to extract ground planes from unordered point clouds based on cloth simulation
- Designed and implemented a discretization algorithm to reduce the global environment to a probabilistic 8-connected occupancy grid enabling algorithms such as Dijkstra's, A*, D*, and RRT*
- Applied coverage path planning with boustrophedon cellular decomposition to ensure complete exploration of an environment
- Integrated with ROS2 (Robotics Operating System) to enable efficient consolidation of resources and communication between components in the robot system

Projects

Autonomous Navigation using GraphNav  May 2025 - June 2025

- Created program that stores a sequence of key poses as a graph with edges representing the translation and rotation between any valid pair of nodes representing key poses
- Implemented Hierholzer's algorithm to find the Eulerian trail/circuit to aim for complete coverage of an environment

GBA "World's Hardest Game"  March 2025

- Implemented "World's Hardest Game" in C that runs on the Game Boy Advance
- Used Direct Memory Access to avoid the overhead of copying large arrays of pixels to the video buffer preventing screen tearing

Wandersync  Aug. 2024 - Dec. 2024

- Designed and implemented full-stack app travel assistance app for collaborators to plan trips together
- Followed SOLID/GRASP software design principles to maintain robust interaction between system components
- Led the consolidation of MVVC concepts optimizing performance and improving user experience

Skills

Languages: C++, Python, Java, C, Rust, x86-64 assembly, Bash, JavaScript, TypeScript, HTML/CSS

Libraries: OpenCV, NumPy, Eigen, Open3d, PCL, VTK, PyTorch, TensorFlow

Technologies: ROS2, Nav2, Git, Docker, Jupyter, Anaconda, Firebase