Sudhir Gunaseelan

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Summary

An aspiring software developer with hands-on experience in programming and problem-solving. Showcased skills through projects like developing navigation algorithms for Cozmo Robot using Python and OpenCV, and implementing Checkers and Sokoban games in C++ using SFML. Currently pursuing Master's degree in Computer Science at the University of Massachusetts Lowell. Eager to leverage my skills and knowledge in a challenging environment that offers growth and learning opportunities.

Education

- **Master of Science (M.S.) in Computer Science - Cybersecurity**
  University of Massachusetts Lowell, Lowell, MA September 2024 - December 2025
  Coursework: *Algorithms, Data Communications, Database, Natural Language Processing, Computer & Network Security, Malware Analysis, Artificial Intelligence, Fundamentals of Robotics, Computer Architecture and Design, Intrusion Detection Systems.*

- **Bachelor of Science (B.S.) in Computer Science**
  University of Massachusetts Lowell, Lowell, MA September 2021 - August 2024
  - GPA: 3.404 Honors: Cum Laude, Dean's List
  Relevant Coursework: *Computing IV (Advanced C++ Programming), Object Oriented Programming, Machine Learning, Mobile Robotics, Data Structures, Analysis of Algorithms, Data Communications, Graphical User Interface Programming, Computer Architecture, Compiler Construction, Operating Systems, Organization of Programming Languages, Foundations of Computer Science, Assembly Language Programming, Discrete Structures, Calculus II, Probability & Statistics.*

Skills

- **Programming Languages**: Python, C, C++, HTML/CSS, JavaScript and SQL.
- **Frameworks/Libraries**: SFML, jQuery UI, React, Bootstrap, Node.js, Express.js, REST API, OpenCV, TensorFlow, scikit-learn, numpy, and Pandas.
- **Software/Tools**: Visual Studio Code, GitHub, Git, Oracle VirtualBox, Linux, Ubuntu, Putty, Jupyter, Wireshark, WPS Office, MS Word, and PowerPoint.
- **Soft Skills**: Time-management, Active Listening, Problem-Solving, Teamwork, and Communication.
- **Languages Spoken**: English & Tamil

Projects

- **Fake News Detection (Python, Machine Learning, Natural Language Processing)**: Developed a machine-learning model to classify news articles as real or fake using TF-IDF vectorization and classification models like Logistic Regression and Random Forest. Implemented preprocessing techniques to clean and structure text data, performed feature engineering, and optimized hyperparameters for model performance. Evaluated models using accuracy, precision, recall, and F1-score, achieving high classification accuracy. Visualized key insights using word clouds and bar charts to highlight linguistic patterns distinguishing fake news from real news. **Tech:** Python, Scikit-learn, TF-IDF, Logistic Regression, Random Forest (October 2024 - December 2024)
- **Scrabble Game (JavaScript, HTML, CSS, Game Development)**: Developed an interactive Scrabble game using JavaScript, HTML, and CSS, allowing players to form words and score points based on letter values. Implemented game logic, word validation, and an engaging UI to enhance the user experience. Designed an intuitive drag-and-drop interface for tile placement and score calculation. **Tech:** JavaScript, HTML, CSS (June 2024 - August 2024)
- **Cozmo Robot Programming (Python, Mobile Robotics, Sensor Fusion)**: Implemented navigation algorithms for the Cozmo Robot, improving pathfinding accuracy through sensor fusion and environmental representation. Leveraged OpenCV to detect colored cubes and utilized the Rapidly-exploring Random Tree (RRT) algorithm for optimal pathfinding. Implemented a finite state machine for task execution based on AR markers, enhancing precision in target detection. Applied Monte Carlo localization using particle filters, significantly improving the robot's navigation and task completion efficiency. **Tech:** Python, OpenCV, RRT algorithm, Monte Carlo localization (January 2024 - April 2024)
- **Checkers Game (C++, Game Development, Object-Oriented Programming)**: Built a fully functional Checkers game using C++ and the SFML library, with complete game logic including move validation, piece elimination, and promotion to kings. Focused on object-oriented programming to ensure smooth gameplay with a visually appealing SFML-based interface. **Tech:** C++, SFML, OOP (March 2023 - April 2023)

Hobbies/Interests

- Solving a 3 x 3 Rubik's cube.
- Playing Badminton.