Sugheerth Sreedharan
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Objective

To harness my extensive mechanical engineering background and 5 years of software development expertise alongside my experience in Master's in Robotics to drive groundbreaking advancements in the field of autonomous robotics.

Education

- **Master of Science in Engineering Science: Robotics,University at Buffalo,SUNY (GPA 3.75/4)** **Expected: December 2024**
- **Bachelor of Technology: Mechanical Engineering, SASTRA Deemed University, (GPA 7.96/10)** **May 2018**

Technical Skills

- **Programming Languages:** Java, C, C++, Python, Go, HTML, SQL, JavaScript, Java Server Pages(JSP)
- **Tools and Frameworks:** REST, Agile, Waterfall, Microsoft Word, Excel, PowerPoint, Outlook, Linux, Git, Mercurial, MySql, PostgreSQL, Kafka, Docker, gRPC, Protobuf, Apache Lucene, Elasticsearch, Github, Gitlab, Bitbucket, Sourcetree, SolidWorks, CATIA, Pro-E, ANSYS, LS-Dyna, ROS, rospy, Simulink, MATLAB, LaTeX, Dafny, CARLA, AirSim, Autoware

Experience

Member Technical Staff (Software Development Engineer), Zoho Corporation, Chennai, Tamil Nadu, India ***Sep 2018- Aug 2023***

- Spearheaded core development of Cloud Repository Management System, overseeing end-to-end service creation from competitor analysis to feature implementation, server provisioning, and security enhancement.
- Engineered search indexing system achieving sub-40 ms retrieval time, optimizing content search functionality.
- Implemented dynamic code intelligence across multiple programming languages within repositories using docker containers, reducing redundancy and enhancing efficiency.
- Innovated database architecture reducing data redundancy by over 70% andmitigating server crashes to 0 through background process optimization.
- Enhanced code efficiency by approximately 40% by optimizing algorithms and resolving memory leak issues.
- Monitored and addressed security threats adhering to cloud software norms, ensuring seamless operations.
- Automated heavy-duty repository processes, reducing response time by 60% through asynchronous pipeline scheduling.
- Integrated polyglot services via gRPC and protobuf, reducing maximum response time by over 200%.
- Produced comprehensive product, API, and technical documentation fostering peer collaboration and conducted informative sessions for product induction and technical presentations.

Academic Projects

Ongoing Research Projects:

- **Autoware Verification Project:** **Feb 2024 - Present**
  - Conducting research on formal methods for autonomous robotic systems, investigating planning aspects within Autoware framework.
  - Utilizing the CARLA simulation environment to simulate Autoware's behavior.
  - Focusing on verifying and optimizing performance metrics.
- **Tracking and localizing a flying object from another flying system:** **Feb 2024 - Present**
  - The objective is to maximize the active tracking continuity and minimize tracking error
  - Aim to use a combination of ML models for frame-wise object tracking while incorporating the physics of both flying systems to optimize tracking and discard invalid estimates.
  - Plan to use publicly available visual data of flying objects and simulate using AirSim

Robotics Algorithms **Aug 2023 - Dec 2023**

- Implemented **Rapidly-Exploring Random Trees** , **A***, and **Dijkstra** algorithms for path planning.
- Developed **Gap Follow** algorithm for autonomous vehicles and secured second position in the race organized as part of the program.
- Utilized **AMCL**, **Particle Clouds**, **Pure Pursuit** for **localization and control**.
- Researched **Stereo & Monocular Odometry** for **perception** and **motion estimation**.

Senior Undergraduate Year Project: Side Crash Analysis of a Tubular Frame **Jan 2018 - May 2018**

- **Side Pole Impact Test** to determine the **crashworthiness of a tubular vehicle frame** using CATIA and LS-Dyna
- Proposed and **simulated the decrease in frame deformation** by introducing a woven flax-epoxy composite side structure that **absorbs part of the crash energy** thus protecting the passenger cabin
- Documentation of the impact parameters and the level of deformation and energy absorbed, with & without the composite side structure

SASTRA Racing Team ***Jun 2015 - Dec 2016***

Part of the **SASTRA SAE**(Society of Automotive Engineers) **Collegiate Club** and a member of the **SASTRA Racing Team(Transmission Team)**, building and testing an off-road buggy to compete in the endurance racing event: **BAJA SAEINDIA 2016**

Responsibilities And Activities:

- Research and selection of a suitable differential, calculation of output stats and computation of maximum gradability
- Creating digital models of the differential casing using SolidWorks, performance and analysis reports
- Fabrication, Building and testing the vehicle, tuning the engine for better performance and integrating the engine into the vehicle

Positions of Responsibility

- **Scout Captain**, Sindhi Model School, Chennai, Tamil Nadu, India ***Jun 2011 - May 2012***
- **School Pupil Leader**, Sindhi Model School, Chennai, Tamil Nadu, India ***Jun 2013 - May 2014***
  - Led the organizing committee, represented the school on various occasions, excelling in public speaking, team-building, problem-solving
- **Member of Events**, Tech Fest, SASTRA University, Thanjavur, Tamil Nadu, India ***Jun 2016 - May 2018***
- **Head of Marketing & Shows**, Tech Fest, SASTRA University, Thanjavur, Tamil Nadu, India ***Jun 2017 - May 2018***
  - Led a team of 30, acquiring funding and sponsors, marketing the Fest and its events, planning and organizing shows and events, demonstrating leadership, problem-solving skills and out-of-the-box thinking