

SYSTEMS ENGINEER

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TECHNOLOGIES & SKILLS

Model-Based Systems Engineering ■ System Design & Analysis ■ Requirements Engineering ■ Use Case Diagrams
Context Diagrams ■ Behavioral Diagrams ■ Activity Diagrams ■ State Machine Diagrams ■ Interface Matrices
CONOPS ■ FFBD ■ IDEF0 ■ FMEA ■ FMEDA ■ FTA ■ FHA ■ HARA ■ VCRMs ■ Test Cases ■ Test plans ■ Verification &
Validation ■ End to End Traceability ■ Optimization ■ Integration ■ Technical Documentation ■ Design Thinking
Six Sigma ■ ISO26262 ■ CAD Modeling ■ Project Management ■ Cross-functional Interfacing ■ Team Leadership
Cameo Systems Modeler, PTC Integrity Modeler, JAMA, DOORS, JIRA, XRAY, Ansys Medini
SysML, UML, BPMN, C, C++, Python, SolidWorks, CATIA, LabVIEW, MATLAB, Simulink, MySQL, Microsoft Office

RELEVANT EXPERIENCE

Uber ATG (Advanced Technologies Group) – 50 33rd Street, Pittsburgh, PA, USA - 15201

Oct 2019 – Current

SYSTEMS ENGINEER, MBSE

Working with multi-disciplinary teams of engineers to execute phases of systems and safety engineering within a model-based framework to develop current and next gen vehicle platforms for Uber's fleet of self-driving vehicles.

- **Designed & deployed a complex System of Systems framework to engineer and house system and subsystem level functional, performance, interface, and safety requirements** for various autonomy capabilities.
 - **Developed, deployed, administered, and used various projects, workflows, and item types on Jama** to support the definition, analysis, integration, and traceability of multiple levels of requirements.
 - **Guided the design, development, and final deployment of custom SRD and VCRM templates in Jama** to showcase safety case compliance and test-based coverage of requirements.
- **Working as the functional owner of various autonomy capabilities and features** to elicit system requirements and conducting safety reviews with relevant stakeholders.
 - **Developing and leveraging various CONOPS, Functional Flow Diagrams, Activity Diagrams, State Machine Diagrams and Data Flow Diagrams** to map logical and physical architecture of complex systems to aid the elicitation of performance requirements and parametric data.
 - **Conducting System Design Analysis** to identify gaps and resolve conflicts in requirements.
- **Using SysML to develop operational, functional, performance, and behavioral models for validation, and regression testing** of ISO26262 compliant safety related and mission critical applications.
- **Developed and deployed an org wide Operational Domain Taxonomy-based V&V Test framework in order to establish a strong end to end traceability** between requirements, test artifacts and results.
 - **Designed, developed, and deployed workflows and test artifacts on the Jira-Xray platform.**
 - **Working in tandem with ITENG teams to develop and deploy a complex integrated toolchain consisting of Jama, Jira-XRAY, GitHub and other in-house tools** to optimize and support test artifact generation, testing workflows and traceability with requirements.
 - **Interfacing with test teams to develop & review test cases, test plans & test metrics** for autonomy features at the system and subsystem levels.
- **Providing SysML modelling support to capture and develop hardware & software architecture.**
 - **Participating in the assessment of Subsystem level FMEAs and FTAs** developed using Ansys Medini.

Cornell Cup Robotics – Cornell University, Ithaca, NY, USA - 14850

Sep 2018 – May 2019

SYSTEMS ENGINEER

Cultivated interest for modular robotics in K12 students with the development of prototypes.

- **Improved a prototype model with trade-off analysis to obtain MVP** reconciling various stakeholder requirements.
- **Decreased prototyping time by 50%, reducing errors** with the creation of interface matrices, decision matrices, and SysML models to establish traceability between various knowledge bases due to the lack of SMEs.

- **Eliminated the need for multiple iterations** with concept sketches, use case behavioral and activity diagrams, CONOPS, FFBDs and IDEF0s to establish a framework.
- **Reduced probability of failure causing a lifetime increase of 4 years, reduced R&D costs by \$15K, and an ability to undercut competitor retail prices by \$30 per unit** by using DFMEAs, FTAs, and six sigma principles.
- **Identified, analyzed and mitigated hazards to increase operational safety of product** by developing test cases for behavioral and non-behavioral requirements of hardware and software components; used verification cross reference matrices to track requirements' verification.

Apollo Microsystems Ltd. –IDA Mallapur, Hyderabad, TS, India - 500076

Oct 2017 – May 2018

MECHANICAL DESIGN ENGINEER

Spearheaded a project for a multinational client overseeing 5 team members and 47 external vendors.

- **Closed a \$205K contract** by gathering customer requirements, eliciting system and subsystem level functional & performance requirements, conducting feasibility analyses, and outlining total project estimates to define a custom solution. Administered this budget.
- **Reduced prototype development timelines** by utilizing SME's to oversee electronics, manufacturing, and QC, balancing workloads for focus on system design, prototyping, material procurement, testing, and QA.
 - **Finished prototyping in under 1-month** by using Systems engineering methodologies such as CONOPS, Behavioral Diagrams, Activity Diagrams, FFBDs, IDEF0s, Behavioral and Non-behavioral test procedures, and requirements verification.
- **Cut material acquisition costs by \$3K** through a vendor exclusivity clause for upcoming projects.
- **Saved \$2K on 3rd party manufacturing costs** by supplying procured material versus using vendor materials.
- **Determined probability of product failure**, utilizing behavioral and non-behavioral requirements for testing to include FTAs, FMEAs, and HARAs. Obtained an external 3rd party QA assessment.

MECHANICAL DESIGN INTERN

Conducted research on the design and manufacturing of cycloidal drives.

- **Tested for reduction in stoppage time** by integrating the prototype mechanism into the existing testbed.

SRM ASV (Autonomous Surface Vehicle) – SRM University, Chennai, TN, India - 603203

Mar 2015 – May 2017

TEAM LEAD / SYSTEMS INTEGRATOR

Led the first India-based team (30 people) to participate in the International Roboboat Competition.

- **Secured INR 3.5M (\$50K) in funding and INR 500K (\$7K) in sponsorship money** to design and build an integrated swarm system of an autonomous surface vehicle, autonomous underwater vehicle, and an unmanned aerial vehicle.
- **Generated proof of concept in less than 3 months** using model-based systems engineering methodologies, concept sketches, use case diagrams, FFBDs, and IDEF0s to reduce R&D and development time.
- **Built the architectural framework with navigation, computer vision, and communication protocols** on C++, MATLAB, using sensor data from cameras, GPS, IMU, Lidars, and hydrophones to write the programming.
- **Completed 1-month ahead of schedule**, allowing for additional SIL and HIL testing on data acquisition programs and system-level testing with sensors after integration of software components.
- **Increased viability with a sustainable CV program to work in various light conditions** through an FMA on the different situations that could obscure vision and developed filtering and enhanced protocols.

EDUCATION

Master of Engineering, Systems Engineering ■ Cornell University – 3.43 GPA 2019

Bachelor of Technology, Mechatronics Engineering ■ SRM University – 2.9 GPA 2017

LICENSES & CERTIFICATIONS

Associate Systems Engineering Professional (ASEP) ■ INCOSE 2019

Certified Six Sigma Green Belt ■ Cornell University 2019

Certified Associate – Mechanical Design (CSWA) ■ Dassault Systèmes 2017

Machine Learning ■ Coursera & Stanford University 2017