

Abhishek Ram

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|| [LinkedIn](#) | [Personal Website](#) | [Engineering YouTube Page](#) ||

SUMMARY STATEMENT

I am a diligent and motivated multidisciplinary engineer with demonstrated collaborative skills in successfully contributing to challenging product development projects.

EDUCATION

University of Maryland College Park

Master of Science in Mechanical Engineering

Focus: Reliability, Prognostics, Material Modeling, and Mechanics

Fall 2020 - December 2022

GPA: 3.89

University of Massachusetts Amherst

Bachelor of Science in Mechanical Engineering

Minor in Applied Mathematics

Fall 2016 - December 2019

GPA: 3.53

GRADUATE COURSEWORK

- | | | |
|--|--|-----------------------------------|
| • Design for Reliability | • Mathematical Techniques of Reliability Engineering | • Continuum Mechanics |
| • Prognostics and Systems Health Management | • Mechanical Fundamentals of Electronic Systems | • Linear Integer Optimization |
| • Machine Learning and Artificial Intelligence for Engineers | • Finite Element Methods | • Numerical Methods for Engineers |
| | • Modeling Material Behavior | |

INDUSTRIAL EXPERIENCE

The Charles Stark Draper Laboratory (Cambridge, MA)

October 2022 - Present

- Digital Engineering Solutions Architect
 - Digital Engineering Experience
 - Developing multiple digital twin demos that are virtual representations of a physical legacy system that leveraged mathematical modeling, simulation, machine learning, and artificial intelligence applied to data measured from the physical legacy system. Took over as the lead for this effort for part of FY23 and FY24 and managed a team of five.
 - Actively working with program management and individual stakeholders simultaneously to complete digital twin demo candidate down-selection. Using interviews with stakeholders and program management, demo candidates were compared based on risk to fleet surveillance, feasibility of generating the demo, and priority for completing the demo.
 - Represented digital twin development in the continuous development of a fleet surveillance system model, particularly in the form of requirements identification for fleet surveillance to support generating digital twin demos.
 - Completed maturity assessments for different visualization tools for demonstrating demo outputs.
 - Worked closely with data engineers, systems modelers, and other systems engineers to generate requirements and conduct research for a future digital engineering ecosystem to support the next generation of the legacy system.
 - Reliability/Safety/Cybersecurity Engineering
 - Leveraging state-of-the-art reliability practices to support the development of a reliability, availability, and maintainability (RAM) plan for the next generation of the legacy system.
 - Evaluating the application of Systems Theoretic Process Analysis (STPA) to support reliability, safety, and cybersecurity considerations in the next generation of the legacy system.
 - Participating in cyber tabletops (CTTs) to identify attack vectors for possible system exploitation based on the current design for the next generation of the legacy system.
 - Producing multiple memorandums on legacy system reliability metrics to support fleet surveillance reports and analyses required by failure review boards (FRBs.)
 - Representing the reliability, availability, and maintainability (RAM) team in the continuous development of a fleet surveillance system model, including requirements identification, mapping requirements to specific fleet surveillance system elements, and tying reliability use cases to specific actors and behaviors.
 - Additional Leadership Opportunities
 - Nearly single-handedly ran a food drive throughout my directorate and managed multiple events as part of the directorate-wide social committee.
 - Running the connector program for my division, which connects new hires to current employees based on matching expertise and possible growth areas for the new hire.

Dassault Systemes - SIMULIA (Johnston, R.I.)

- **User Assistance Intern** **June 2021 - December 2021**
 - Developed simulation examples and documentation to demonstrate 3DEXPERIENCE's capabilities in Advanced Material Calibration, Topological and Shape Optimization, Fiber Reinforcement, and Virtual Bolt modeling.
 - Reviewed, critiqued, and edited examples for Conjugate Heat Transfer, Packaging Optimization, and Submodeling.
 - Conducted simulation apps tooltip review to identify missing entries. Fixed over 400 tooltips to improve user experience.
- **Academic Specialist Intern** **May 2019 - August 2019**
 - Developed [videos](#) to introduce new users and other individuals to concepts of finite element analysis while utilizing the 3DEXPERIENCE platform.
 - Developed a simulation workflow with laminar and turbulent capabilities for modeling steady flow over airfoils utilizing the 3DEXPERIENCE platform.

ACADEMIC WORK EXPERIENCE

University of Maryland, College Park Graduate Teaching Assistant for:

- Introduction to CAD **August 2021 - December 2021**
- Introduction to Materials Engineering **January 2021 - May 2021**
- Instrumentations I **August 2020 - December 2020**

Undergraduate Academic Work Experience:

- Teaching Assistant for Introduction to Numerical Methods (UMass) **September 2019 - December 2019**
- UMass Engineering Peer Expert for MATLAB and SolidWorks **May 2018 - December 2019**

RESEARCH WORK EXPERIENCE

Center for Advanced Life Cycle Engineering (CALCE)

September 2020 - December 2022

- **Graduate Research Associate**
 - Dedicated analyst working under Dr. Diganta Das (also my thesis advisor.) In CALCE:
 - Worked on failure analysis of electronic components, circuit card assemblies, insulated gate bipolar transistor modules, and discrete devices.
 - Conducted extensive failure modes, mechanisms, and effects analysis (FMMEA) on various components.
 - Researched screening and qualification procedures for optoelectronic and discrete devices for product reliability validation.
 - Studied screening of mid-infrared quantum cascade lasers on a U.S. Navy SBIR.

PUBLICATIONS, CERTIFICATIONS, AND RESEARCH ASSOCIATIONS

- **Publications (Shortened List)**
 - Enhancing Qualification Against Wear-Out Failure Via the Use of Diagnostics and Prognostics Techniques (<https://doi.org/10.1002/qre.3634>)
 - Life Cycle Profile Development for Product Reliability Assessment (Accepted with Revisions in Quality and Reliability Engineering International, 2023)
 - Application of Diagnostics and Prognostics Techniques to Qualification Against Wear-Out Failure [M.S. Thesis] (2022) (<https://doi.org/10.13016/ssjw-uglz>)
 - TransPharm (Publication Number: [US 2021/0074115 A1](#))
- **Certifications**
 - Systems Theoretic Process Analysis (STPA) Practitioner (2023)
 - Developed by Nancy Leveson from MIT Aero-Astro and administered by Professor John Thomas and Dr. William "Dollar" Young, this rigorous course introduced participants to STPA and how to appropriately apply it for safety-critical and cybersecurity applications.
- **Research Associations**
 - AIAA Digital Engineering Integration Committee Co-Chair of CoDADE (Computational Design and Analysis for Digital Engineering)
 - Co-chair of the AIAA subcommittee dedicated to being a bridge between digital architects and their stakeholders across industry, academia, government, and others.
 - Panel Organizer and Chair: [AIAA Sci-Tech DGE-19/CC11 - A Study of Guidelines for Enabling Interoperable and Appropriate Use of AI](#)

SKILLS

- Design: SolidWorks, CATIA, Onshape, 3DEXPERIENCE Design, Ansys Design Modeler, Creo
- Simulation: ABAQUS, Ansys Structural, MATLAB, Simulink, Mathematica, MathCAD, 3DEXPERIENCE Structural & Fluids, Reliasoft Reliability Modeling, JMP Design of Experiments
- Programming: C++, Python, JAVA, Arduino scripting, HTML, CSS, Excel Macros
- Other Software: Microsoft Products, Google Products, JIRA, MagicDraw
- Additional Languages: Fluent in Spanish and a native speaker of Telugu