

ALLEN PRASAD VARGHESE

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Summary

- Developed high impact polymer extrusion die design algorithm to expedite design process by 98%.
- Designed an innovative perforated plate system, funded by NASA, to regulate unstable cryogenic flows in reduced gravity, delivering an expulsion efficiency of 92%.
- Well-versed in programming languages, powering engineering workflows and rich research experience in fluid dynamics and spacecraft systems, as an active member of ASGSR and AAS.

Key Industrial Skills

- Six Sigma Green Belt Certified
- Computer Aided Engineering (CAE) – ANSYS, Fluent, DualSPHysics, Converge, and Chrono
- Computer Aided Design (CAD) – SolidWorks, CREO, and Fusion 360
- Programming – UDF DevOps, MATLAB, VBA, C#, C++, Fortran, JavaScript, Python, and OpenMPI

Soft Skills

- Strong communication abilities with ability to clearly articulate complex engineering concepts.
- Adept at reading interpersonal dynamics and responding empathetically.
- Creative problem-solver capable of coming up with innovative mechanical engineering solutions.

Experience (2018 – 2024)

CFD Hydrodynamic Quantitative Analysis Experience

Gained as Researcher funded by National Science Foundation (NSA)

- Spearheaded computational efforts using expertise in DualSPHysics to establish novel hydrodynamics for vibrating beams submerged underwater near the free surface.
- Code development as well as prowess in MATLAB data analysis as evidenced by developing an algorithm to extract relevant hydrodynamic coefficients from fluid forces.

CFD Cryogenic Multiphase Flow Analysis Experience

Gained as Researcher funded by National Aeronautics and Space Administration (NASA)

- Cross-functional collaborator with acumen in design of cryogenic propellant management systems that delivered 92% expulsion efficiency under reduced gravity conditions.
- Complex CFD model development with extensive knowledge of cryogenic propellants, accurately describing flow in microgravity for long duration space missions.
- Demonstrated strong project management and technical research capability, leading to 2 publications in journal of American Institute of Aeronautics and Astronautics, and Journal of Spacecraft and Rockets.

Polymer Process Automation Experience

Gained as Researcher funded by New Jersey Precision Technologies (NJPT)

- Process automation mastery with experience in pioneering parametric design automation using SolidWorks API to accelerate polymer extrusion die design by 98%.
- Expert system developer with ability to construct self-learning knowledge databases drawing automated inferences from prior design cases to tackle the growing skills gap.
- Knowledge transfer facilitator with exposure in interviewing interdisciplinary engineers, to develop 4 robust standard working protocols based on gathered insights and bottlenecks across the organization.

Education

Doctor of Philosophy in Mechanical Engineering (PhD) New Jersey Institute of Technology	Graduating May 2024
Master of Science in Mechanical Engineering (MS) New Jersey Institute of Technology	Graduated
Master of Engineering in Mechanical Engineering (MEng) Lancaster University	Graduated
Bachelor of Engineering in Mechanical Engineering (BEng) Lancaster University	Graduated

Professional Memberships

- American Society for Gravitational and Space Research (ASGSR) – Member ID: 4080.
- American Astronomical Society – Member ID: 80623.

Honors & Awards

- Recognized with Chancellor's Medal for graduating highest distinction from Lancaster University Mechanical Engineering Master's program (2018).
- Awarded with the Young Innovators Award by HiTech India for the research and development of an IOT based fleet management device (2015).

Affiliations & Hobbies

- Assisted organizing community service events and fundraisers as the Secretary of Rotaract club.
- Directed, mentored, and fostered a teamwork environment as the President of Robotics club.
- Represented the Engineering department at various university events as the Student Ambassador.
- Learnt swimming and actively working on improving performance and endurance.
- Played as a midfielder for the school soccer team, developing skills in teamwork and sportsmanship.
- Flight simulation enthusiast, honing my skills in virtual cockpits and exploring the world of aviation.
- Participated in competitive Dota, where I developed strategic thinking, dynamic problem solving, situational awareness, and team collaboration, while competing with players worldwide.
- Fluent in speaking and listening in English, Malayalam, and Hindi. Proficient in reading and writing in French and Arabic. Continuously seeking to expand language skills and fluency.