Abikrishnaa Parimelalagan

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Education

BITS Pilani, Dubai Campus — Academic City
BE Mechanical Engineering, Minor in Aeronautics *GPA: 8.50/10* — Sep 2022 - Jun 2026

Skills

Programming and Software Development:	Python, C, C++ (Arduino), HTML, MySQL, JavaScript, CSS Git
Tools and Applications:	OpenFOAM, ParaView, Fusion360, AutoCAD, GIMP, Blender Microsoft Office Suite, Slack
Technical Proficiency:	CNC Programming (G-code)

Experience

BITS Motorsports — BITS Pilani, Dubai Campus
Junior Member - Documentation Focus — Sep 2022 - Present · 1 yr 5 mos

- Discovered opportunities to optimize communication channels, resulting in quicker decision-making. Recognized potential enhancements in documentation practices, contributing to more accurate project records.
- Engaged in hands-on efforts to enhance team projects, demonstrating practical skills in on-site contributions. Provided valuable on-site feedback, leading to adjustments that improved the overall quality of manufactured components. Integrated documentation insights with practical knowledge, fostering a more cohesive approach to project execution.
- Actively transitioning into design and simulation realms, acquiring proficiency in tools like SOLIDWORKS for intricate design work and Ansys Fluent for fluid dynamics simulations.

Nuclear Physics Summer Mentorship — Old Dominion University, Virginia
Research and Skill Development — Aug 2021 - Oct 2021 · 3 mos

- Explored nuclear physics fundamentals, including the Standard Model, Quantum Chromodynamics, and advanced topics like Three-Body Problems and Feynman diagrams.
- Under the guidance of Dr. Raul Briceno (UC Berkeley) and Dr. Andrew Jackura (College of William and Mary), developed Python proficiency and hands-on experience with tools like Lattice QCD and the Breit-Wigner curve.
- Demonstrated commitment through detailed weekly reports, showcasing progress tracking and effective communication in a mentorship with field experts, gaining a solid theoretical foundation in nuclear physics complexities.

Projects

Computational Fluid Dynamics Study of Iron Man Suit
Conducted detailed simulations of the airflow around the Mark 42 Iron Man suit using OpenFOAM. Played a key role in collaborative mesh transformation efforts to enhance simulation accuracy and efficiency. Explored a spectrum of advanced meshing solutions, including cfMesh, snappyHexMesh, and meshing through Ansys. Employed the simpleFoam solver within the OpenFOAM framework to derive comprehensive simulation results. Proficiently utilized ParaView to translate the simulation data into compelling visualizations, analyzed pressure contours, and interpreted intricate flow patterns. Additionally, successfully determined lift and drag forces, ultimately concluding that under the initialized boundary conditions, the Mark 42 Iron Man suit was deemed unable to achieve flight.

Team HyWaSol
Advanced the Team HyWaSol project by spearheading the prototyping of an innovative solution - integrating wave energy conversion with solar energy. Conducted a thorough literature review to inform our approach. Collaborated with mechanical engineering and electrical engineering peers under faculty guidance. Generated diverse model renderings using Blender and Fusion 360. Secured a spot among the top 50 finalists out of 300+ participants in a grant competition for COP28 presentation facilitated by ExpoLive.

Python-Based Structural and Cost Analysis of Beams and Trusses using FEA methods
Led a Python project to optimize bridge beam shapes for cost-efficient design, considering material specifications. Simultaneously, crafted a versatile truss stress analyzer for user-driven variations, incorporating cost and stress calculations. Demonstrated strong collaborative and team leadership skills, employing Git for seamless version control in a dynamic team environment.