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, Ansys Fluent, Fusion360, AutoCAD GIMP, Blender, Microsoft Office Suite, Slack
Technical Proficiency:	CNC Programming (G-code)

Experience

BITS Motorsports (Formula Student) — BITS Pilani, Dubai Campus
General Secretary — Sep 2022 - Present · 1 yr 5 mos

- Actively overseeing the utilization of a $4600 USD budget allocation. Enhanced communication methods and identified potential improvements in documentation, contributing to more accurate project records. Transitioning to a more design and simulation focused role.
- Established strategic partnerships with industry professionals, fostering knowledge exchange and skill development within the club. Provided decisive on-site feedback, driving improvements in the quality of manufactured components. Integrated documentation insights with practical knowledge, resulting in streamlined workflows and enhanced project outcomes.

Nuclear Physics Research Mentorship — Remote
Junior Research Mentee — Aug 2021 - Oct 2021 · 3 mos

- Explored nuclear physics fundamentals, including the Standard Model, Quantum Chromodynamics, and 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 to learning through detailed weekly reports and effective communication in a mentorship with field experts. Acquired a solid theoretical foundation in the complexities of nuclear physics and collaborated with graduate students on research regarding three-particle body decays, including reviewing relevant publications on scattering phenomena.

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 meshing solutions, including cfMesh, snappyHexMesh, and meshing through Ansys. Employed the simpleFoam solver within OpenFOAM to derive comprehensive results. Proficiently utilized ParaView to translate the simulation data into compelling visualizations, analyzed pressure contours, and interpreted intricate flow patterns. In addition, the lift and drag forces were also calculated, 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 sustainable energy project by spearheading the prototyping of an innovative solution - integrating wave energy conversion with solar energy. Performed an extensive literature review to guide our approach, and collaborated with mechanical engineering and electrical engineering peers under faculty guidance. Generated multiple model renderings using Blender and Fusion 360. Secured a spot among the top 50 finalists out of 300+ participants in a grant seeding competition for COP28 presentation facilitated by ExpoLive. Engaged in discussions with companies to explore potential avenues for additional funding opportunities.

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.