Tarun Prakash

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Education

Purdue University, West Lafayette, IN
Bachelor of Science in Mechanical Engineering — Expected Graduation: May 2024
Minor in Organizational Leadership; Certificate in Entrepreneurship & Innovation

Experience

Nize, Pleasanton, CA
Founder & Chief Operating Officer — August 2018 – Present
- Led a team of 15 employees to build a product to automate attendance processes and save K-12 schools over $100,000 per year
- Launched pilot-program at local high school, increasing student and teachers' satisfaction with attendance process by 50%
- Prototyped enclosure and PCB designs using Fusion 360 and KiCAD to collect student info from NFC student ID cards
- Spearheaded implementation of Python-based software service release cycle, accelerating feature deployment timeline by 30%

SpaceX, Hawthorne, CA
Crew Starship Engineering Intern — May 2023 – August 2023
- Integrated methane & oxygen compressor hardware in preparation for a $72 million NASA HLS milestone testing
- Enabled flight-like testing by analyzing data, finding gaps, and implementing sensors for improved thermal characterization
- Developed MATLAB script to calculate compressor efficiencies from test data, enabling focus on safety and performance

Tesla, Palo Alto, CA
Mechanical Design Engineering Intern — May 2022 – August 2022
- Designed novel hardware for a motor dyno test considering sealing, lubrication, & ergonomics using CATIA & ANSYS
- Evaluated quality control equipment for next-gen drive unit to validate stator electrical metrics for production electric vehicles
- Measured partial discharge inception voltage at 20 environmental conditions to validate magnet wire insulation design
- Performed 12 NDT on 48 bonded wire samples to evaluate material properties and select optimal configurations

Maurice J. Zucrow Laboratories, West Lafayette, IN
Propulsion Test Engineer — May 2021 – May 2022
- Conducted lifecycle testing with LabVIEW on 100+ H2O2 fueled RCS thrusters to simulate spaceflight usage & conditions
- Developed a heat exchanger and data acquisition system for evaluating a Hydrogen/GOx rotating detonation rocket engine
- Automated go/no-go data analysis process in MATLAB, reducing human dependance and increasing accuracy to 100%

Leadership

Purdue Space Program
Technical Director — December 2021 – January 2023
- Coordinated 6 aerospace projects and 100+ L1 launch certifications under the Purdue Space Program student organization
- Mentored 200+ aspiring new members and guided them towards technical projects that aligned with their skills and interests

Propulsion Lead — August 2020 – January 2023
- Launched an LNG/LOX fueled rocket twice in a weekend, setting the world record for 1st reflight of a college liquid rocket
- Managed development of a 2,000 lbf Ethanol/LOx fueled engine, propelling a rocket targeting an apogee of 75,000 ft
- Overhauled lower airframe and fin can assembly in SOLIDWORKS, reduce weight by 10 lbs and increase assembly ease
- Directed trade studies on various propulsion topics including injectors, composite chambers, cooling methods, and igniters

Projects

Audi E-Tron RC Car
Project Manager & Engineer — January 2023 – May 2023
- Designed chassis for RC vehicle using NX FEA and topology studies to optimize structural integrity, reducing mass by 33%
- Leveraged CFD in STAR-CCM+ to analyze 4 aero packages, decreasing drag forces by 20% through design refinements

Hammer Down!
Project Manager & Engineer — August 2022 – December 2022
- Designed, validated, & prototyped 3 carnival game mechanisms through motion studies in Creo Parametric and 3D printing
- Created immersive user experience by writing script in C++ to control stepper motor and LCD display based on user input

Publications

JANNAF Journal of Propulsion and Energetics, Ray W. Herrick Laboratories
Exploring the Influence of Material Formulation and Process Parameters on the Vibration-Assisted Printing of High Solids Loaded Mock Energetic Materials

Software: NX, CATIA, SOLIDWORKS, Creo, Fusion 360, KiCAD, ANSYS, STAR-CCM+, LabVIEW, MATLAB, Python, C/C++
Awards: 2022 Dreammaker & Risktaker, Purdue ME Toy Design Best Market Potential Award, Eagle Scout Rank, 1st Dan Black Belt