

# Tarun Prakash

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## EDUCATION

**Purdue University**, West Lafayette, IN

Bachelor of Science in Mechanical Engineering

Minor in Organizational Leadership; Certificate in Entrepreneurship & Innovation

Expected Graduation: May 2024

## EXPERIENCE

**Nize**, Pleasanton, CA

Founder & Chief Operating Officer

August 2018 – Present

- Led a team to build a product to automate attendance processes and save K-12 schools \$100,000 in state funding per year
- Launched pilot within 3 months at local high school, increasing student & teacher satisfaction with attendance technology
- Designed & prototyped enclosure and PCB designs using Fusion 360 & KiCAD to collect information from student ID cards

**SpaceX**, Hawthorne, CA

Crew Starship Engineering Intern

May 2023 – August 2023

- Built methane & oxygen compressor hardware in preparation for \$72 million NASA Artemis milestone test checkouts
- Enabled flight-like testing by analyzing thermal data and implementing sensors for improved system 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 motor dyno testing fixtures with consideration for sealing, lubrication, & ergonomics using CATIA & ANSYS
- Evaluated quality control equipment for next-gen drive unit to validate stator electrical metrics for production vehicles
- Measured partial discharge inception voltage at 20 environmental conditions to validate magnet wire insulation design
- Evaluated 48 bonded wire samples with 12 mechanical, electrical, and thermal NDT to select optimal configurations

**Maurice J. Zucrow Laboratories**, West Lafayette, IN

Propulsion Test Engineer

May 2021 – May 2022

- Developed MATLAB & LabVIEW software for control, automation, & data visualization of 1,000+ propulsion tests
- Designed a fuel preheater and data acquisition system for evaluating novel rotating detonation rocket engine performance

## 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 230 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 48 hours, 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, leading to significant weight saving & ease of assembly
- Directed trade studies on various propulsion topics including injectors, composite chambers, cooling methods, and igniters

## PROJECTS

**Audi E-Tron RC Car**

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!**

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

**Skills:** NX, CATIA, SOLIDWORKS, Creo, ANSYS, STAR-CCM+, Python, MATLAB, LabVIEW, C/C++, KiCAD, Fusion 360

**Awards:** 2022 Dreammaker & Risktaker, Purdue ME Toy Design Best Market Potential Award, Eagle Scout Rank, 1<sup>st</sup> Dan Black Belt