Infant Elfrick Gnanasusairaj

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Education

University of Wisconsin — Madison, MN
Bachelor of Aerospace Engineering + Computer Science — *Sept. 2025 – Present*

Acton Boxborough Regional High School — Acton, MA
High School — *Aug. 2021 – June 2025*

Experience

FTC Team Captain — Sept 2018 – Present
Techno Maniacs — *Acton, MA*

- Placed in the **top 50** teams globally (out of 7,000+) and **ranked 1** in New England, consistently reaching top 10 at statewide competitions.
- Founded a competitive high school robotics team in 6th grade to fill a STEM opportunity gap in the local community.
- Earned over **25 awards**, spanning Engineering Design, Innovate, Inspire, and Community Outreach, reflecting both technical excellence and social impact.
- Built and scaled the team through active recruitment, directly mentoring 20+ student members and engaging over **5,000 youth** through outreach events, workshops, and demos.
- Led both mechanical design and autonomous software development, while cultivating a strong interdisciplinary team structure across engineering, strategy, and marketing.
- Presented at regional STEM fairs, school events, and hosted public showcases to promote robotics education and inspire younger students.

Director of Encoder Development — Aug. 2024 – Present
Princeton Apex Labs — *Princeton, NJ*

- Designed and prototyped a high-precision encoder optimized for FTC odometry, incorporating team feedback to improve accuracy, durability, and ease of integration.
- Collaborated with engineers to refine mechanical and electrical interfaces, contributing to manufacturing-ready versions and supporting documentation for widespread team adoption.

Projects

Open Source Intake | *Onshape, Fusion, 3D Printing, CAM, CNC* — Dec 2024 – May 2025

- Shared CAD, build instructions, and usage guidelines with the **global FTC** community, leading to adoption by **100+ teams worldwide** — including **3+ teams** at the **2025 World Championship**.
- Designed and released a modular, open-source active intake system tailored to the Into the Deep FTC game, enabling fast and reliable element pick-up without requiring precise robot alignment.
- Engineered for accessibility and adaptability, the design featured optimized roller geometry and flexible mounting options to support a wide range of drivetrain configurations.

Linear Odo | *Onshape, 3D Printing, Java, Android* — June 2023 – April 2024

- Engineered a novel linear-rail-based odometry system that improved localization accuracy tenfold over traditional FTC "dead wheel" designs, reducing drift from 10 inches to under 1 inch over match duration.
- Released as an open-source solution, the project introduced a shift from radial to linear mounting, influencing design practices across FTC teams and inspiring adoption by several hardware vendors.

Technical Skills

Languages: Java, Python, C++, JavaScript/TypeScript, HTML/CSS
Frameworks: React, Android, Unity, Node.js, Material-UI, Tailwind, Processing, NextJS
Tools: Git, Blender, GCP, Visual Studio, JetBrains, Onshape, Fusion, 3D Printing, CNC
Libraries: pandas, NumPy, nltk, tensorflow, pyTorch, openCV, face_dectection, Matplotlib