Akilesh Yelchuru

Education

Florida Institute of Technology – BS in Aerospace Engineering May 2027

Skills

3D modeling: Siemens NX, CATIA CAD, SolidWorks, Inventor, Fusion 360
Languages: English, Telugu, French
Lab & Data Analysis: MATLAB, Arduino, sensor integration, structural testing, risk documentation
Programming & Automation: C++, Python, PID Control
Documentation & Process Management: Engineering report writing, Google Workspace, MS Office
Other: JMARS

Experience

Lead Systems Engineer, NASA L'SPACE NPWEE May 2025 – August 2025

- Co-developed BIFROST, a distributed CubeSat network emphasizing mechanical integrity and scalable deployment.
- Simulated thermal and structural loads on mechanical subsystems using Siemens NX; designed for long-term operational reliability in harsh environments.
- Explored the integration of AI/ML systems for automated fault detection and navigation correction in distributed spacecraft.
- Authored startup and validation procedures for mechanical systems under power and thermal constraints.
- Delivered a full engineering proposal with startup/validation protocols, reviewed by NASA engineers, guided by NASA MFC CTO for workforce development.
- Developed CAD designs using Siemens NX to ensure subsystem interface compatibility while performing trade studies to optimize architectures that balanced mission objectives with design constraints in mass, power, cost, and schedule.

Mechanical & Thermal Engineer, NASA L'SPACE Mission Concept Academy January 2025 – May 2025

- Contributed to designing a spacecraft to achieve mission science objectives by supporting the development of both Mechanical and Thermal subsystems.
- Developed CAD designs using Siemens NX to ensure subsystem interface compatibility while performing trade studies to optimize architectures that balanced mission objectives with design constraints in mass, power, cost, and schedule.
- Participated in a virtual academy on space mission concept formulation, demonstrating proficiency in the NASA mission lifecycle through a Preliminary Design Review for a robotic mission.

Mechanical Systems Engineer, Panther Robotics August 2023 – Present

- Designed a competitive competition robot with CAD, with iterative prototyping to integrate mechanical subsystems to build a high-performance robot.
- Performed detailed documentation of the team's engineering process through CAD sketches, performance analysis, and work log.
- Developed a comprehensive analysis system for match optimization data derived from opposing team robot analysis.

Robotics Design Engineer, Panther Robotics August 2023 – Present

- Designed and built a competitive 3 lb BattleBot by modeling in CAD, integrating a weapon and drivetrain system, testing for maneuverability and durability, and successfully preparing for battle through iterative refinements and strategic repairs.

Managing Director, Verity Jan 2020 – Sep 2023

- Developed and implemented innovative programs that advanced the organization's mission while cultivating strategic partnerships and community engagement to enhance program effectiveness and impact.
- Managed daily operations and financial resources to ensure sustainability and efficiency, while overseeing targeted fundraising initiatives to secure essential funding and support.

Digital Literacy Instructor, S2Tech Jun 2022 – Sep 2022

- Delivered tailored lessons on Google Suite, macOS, iOS, and job-search platforms to 10+ international college students, uncovering individual goals and empowering ownership of technology.

- Translated technical jargon into clear, relatable benefits, boosting learner confidence and “customer satisfaction” scores by 30 %.
- Modeled curiosity and continuous learning by iterating lesson content based on real-time feedback in a fast-paced virtual classroom.

Independent Technical Consultant July 2021 – Present

- Researchred and assembled 10 high-performance desktop PCs—matching components to workload, optimizing BIOS/OS configurations, and delivering ~20 % faster benchmark scores than comparable off-the-shelf models.
- Diagnosed and resolved complex issues in home-theater audio networks and multi-device setups, reducing repeat support calls by 40 %.
- Hosted one-to-one technology advice and review sessions to maximize budget contrast to budget-to-performance ratio.
- Guided 30 + households on purchases and ecosystem integration across PCs, laptops, tablets, smartphones, and audio gear; migrated data, set up audio ecosystems, and trained users, boosting adoption and satisfaction.

Managing Director, Verity Jan 2020 – Sep 2023

- Cultivated an **inclusive environment**, leading 40 volunteers to deliver community programs that served 1,200 + participants.
- Created and managed workshops, mentorship, fundraisers, and competitions to raise $10k for increasing technology literacy and resources for kids in Liberia.
- Maintained operational accuracy—budget, scheduling, confidential donor data—aligning with organizational values and legal guidance.

Community Engagement Coordinator, NRIVA Jan 2017 – Sep 2023

- Launched NRIVA’s flagship community STEM program: created and taught Python / Scratch workshops for K-12 students, tailoring content for diverse age groups and boosting foundational coding skills.
- Built and directed a 10-member volunteer team: recruited, trained, and mentored instructors; introduced streamlined prep resources that cut lesson-planning time by 30 %.
- Introduced mentorship circles, parent information sessions, and heritage-focused project themes that strengthened community bonds and highlighted NRIVA’s mission of service.
- Implemented pre-/post-assessment surveys and tracked learning outcomes, feeding data-driven curriculum tweaks that boosted student confidence scores by 40 %.

Projects

Glider Design

- Led a team to design a high-performance glider prioritizing aerodynamic efficiency and structural integrity, achieving a 40:1 glide ratio and 64-meter glide range through advanced carbon fiber composites, rigorous aerodynamic analysis, and meticulous testing, enhancing skills in material selection, project management, and aerospace design.

VEX U Spin Up – Competitive Robotics Design Project | Mechanical Subsystem Lead & Systems Integrator

- Led mechanical design and CAD modeling of high-speed intake and dual-flywheel shooter using SolidWorks and Onshape.
- Integrated drivetrain, shooter, and intake subsystems to ensure compact, modular performance under VEX U constraints.
- Collaborated on autonomous routine development using odometry and PID control, reducing cycle time by 30%.
- Qualified for **VEX U World Championships**, ranking among top regional teams with a high-performing autonomous and driver-controlled system.

BattleBots – Competitive Combat Robotics | Mechanical Subsystem Engineer

- Designed and prototyped modular armor and weapon systems for a 3-lb combat robot, focusing on durability, repairability, and energy transfer optimization.
- Utilized SolidWorks for CAD modeling of drivetrain and weapon assemblies
- Collaborated across mechanical, electrical, and controls teams to integrate brushless motor controllers, LiPo power systems, and receiver fail-safes.

NASA L’SPACE MCA – Mission Concept Academy | Mechanical & Thermal Systems Lead

- Selected for a competitive NASA-sponsored academy to develop a lunar mission concept with a focus on mechanical and thermal subsystem design
- Led CAD design and thermal shielding concept development in Siemens NX; conducted material selection trade studies aligned with mission objectives.
- Performed risk analysis for the Aerobot mission concept and reduced all risk by roughly 70%
- Performed trade studies research for Aerobot mechanical structures and overall Aerobot.
- Presented system-level designs, subsystem interactions, and risk mitigation strategies to NASA engineers and university mentors.
- Gained experience in collaborative proposal development, systems engineering documentation, and aligning technical deliverables with real NASA review processes.