Keshav Anand — Brag Sheet

Program Information

Application for Research and Science Institute (RSI), and ultra-selective (3%) program at MiT for science research

Admission into this program results in auto-admission into **practically any US College** (due to selectivity)

I am applying for RSI so I can promote my **computer science and engineering** research that I have done

- RSI Program Page — top program in the US for high school research
- I am applying in computer science and robotics as research disciplines
- My acceptance is dependent on my prior research, accolades, and the strength of my recommendations

Character Traits and Personality

- **Honest** and high **integrity**: helped catch cheaters in school multiple times.
- **Inquisitive and Curious**: always asking questions and trying to learn more
- **Hardworking and Determined**: Pushing myself to perfection in everything I do
- **Creative Problem Solver**: Able to think outside the box and come up with innovative solutions
- **Character Weaknesses:**

  Can tend to overthink problems and overcomplicated solutions

  Sometimes take on too much at once and struggle to prioritize tasks

  Sometimes struggle with delegation and asking for help when needed

  Can be overly critical of myself and others at times

Education

Plano East Senior High School, Plano *August 2023 – May 2027*
STEM and Multidisciplinary Endorsement

- GPA: 4.73/4.0 (View Unnoficial Transcript)
- Class Rank: **1/1273**
- **Current Coursework:** AP Chemistry, American Studies (AP US History + AP English Language), Digital Electronics, AP Physics I, Calculus III (via Collin College)
- SAT: 1550/1600 — Reading 760/800, Maths 790/800

GaitGuardian: Highlight Research Project

Lead Researcher *Project Portfolio*

- Built **GaitGuardian**, an end-to-end ML system aiding advanced Parkinson's Disease patients.
- Designed a **custom PCB** and embedded stack with a 6-DoF IMU and ESP32-S3 for real-time sensing.
- Developed a **dual-attention CNN + biLSTM** model predicting Freezing-of-Gait up to 2s early.
- Created real-time algorithms for **fall detection** and **tremor classification** using IMU signals.
- Implemented a cloud-based **visual navigation module** with transformer object detection, depth estimation, and multimodal LLM scene descriptions.
- Optimized sensor pipelines via **signal filtering, feature engineering, oversampling**, and model tuning.
- Built two wearable devices (trunk and wrist) plus a BLE-connected **forehead camera** for vision tasks.
- Demonstrated performance exceeding existing FoG, fall, and tremor detection systems.

Won 3rd Place at **The International Science and Engineering Fair**, 2nd OVERALL in Dallas → over $1500 won

Simply Stir: Highlight Research Project

Sole Researcher *Project Portfolio*

- Developed a thermoelectric energy-harvesting system using a TEG for autonomous stirring.
- Designed a compact aluminum enclosure enabling efficient heat transfer and stable thermal gradients.
- Implemented electrical conditioning and load-matching to maximize TEG power extraction.
- Tested power delivery across various R_Loads using Vernier Probes
- Performed thermal, electrical, and mechanical characterization across multiple cooking conditions.
- Conducted viscosity-based stirring tests and identified mechanical design improvements for high-torque fluids.

Qualified to **The International Science and Engineering Fair**, 1st in Engineering @ Dallas

FTC Robotics

Lead Software Developer – Technical Turbulence (2023–Present) *Website*, *Code Repo*

- Designed and implemented **custom inverse kinematics and path-planning algorithms** for precise autonomous navigation.
- Integrated **computer vision pipelines** for object classification using TensorFlow Lite
- Developed novel driver control enhancements to improve driver performance
- Optimized accuracy and real-time performance through efficient sensor usage
- Lead software **Top 30 Worldwide** for autonomous programming; reached FTC State Finals.
- Led software development, version control, and testing for a programming team of 4 members.

Skills

Programming Languages: Java, Python, Bash, C++ (Arduino), Kotlin (FTC), Limited HTML, JS, CSS

Programming Applications: Machine Learning, Signal Processing, Tensor Flow, Computer Vision

Miscellaneous: Public Speaking, CAD, PCB Design, Electrical, Competition Math

Other Activities

Vice President, LASER: Guiding and instructing 120+ students for Science Fair

Founder, Cricket Club: Former USA U15 Cricketer → Formed Plano East's first cricket team

Technology Officer, NHS: Coded and maintained React-based portal for largest NHS chapter in the US

Indian Film Music: Bass, Keys, and Arrangement, member of High Octavez *Original Music Library*