

# Joseph Farkas

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## EDUCATION

### Georgia Institute of Technology

Atlanta, GA

*Bachelor of Science in Computer Science, Devices and Intelligence (International Plan)*

*Expected May 2027*

*Minors in Robotics and German*

*GPA: 4.00*

- Relevant Coursework: Data Structures and Algorithms, Linear Algebra, Multivariable Calculus

## EXPERIENCE

### UX Assistant

Aug 2025 – Present

*Georgia Tech PACE Supercomputing Center*

*Atlanta, GA*

- Supporting over 5,000 researchers with incident triage across high-performance computing systems

### Guidance, Navigation and Control Team

Aug 2025 – Present

*Propulsive Landers @ Georgia Tech*

*Atlanta, GA*

- Applying PID+LQR and nonlinear MPC to optimize rocket's fuel usage in real time powered descent
- Porting on-the-fly convexification algorithm from Python to Rust for on-device trajectory replanning

### RoboCup: Autonomous Software Team

Aug 2025 – Present

*RoboJackets @ Georgia Tech*

*Atlanta, GA*

- Building multi-agent pathfinding, obstacle avoidance and task allocation in C++ for 6v6 robot soccer
- Strengthening ROS stack to interface with telemetry, vision, and low-level control systems

### Software Intern

Aug 2024 – May 2025

*Viasat Inc.*

*Duluth, GA*

- Developed C/C++ firmware and Typescript frontend for prototype three-axis satellite antennas
- Improved responsiveness of ephemeris loading by 90% through multithreading and upgraded XML search
- Built algorithms for analyzing signal quality and atmospheric modeling; implemented CI pipelines for validation
- Assembled and wired rig to test cable fatigue over 100,000 accelerated cycles

### Software Department Lead

Oct 2021 – May 2025

*North Gwinnett Robotics*

*Suwanee, GA*

- Mentored 15 students with limited prior experience in utilizing C++ to process sensor input and control robots
- Collaborated with engineers to design and manufacture robot over eight weeks while managing six-figure finances
- World Competition Autonomous Award, Divisional Champions & 3x State Champions

## PROJECTS

### Natural ASL Communication | *Python, TensorFlow, Jupyter, scikit-learn, Pytorch*

Sep 2023 – Feb 2024

- Applied action-based convolution neural networks on Google's Mediapipe holistic landmark model for OpenCV
- Interpreted 40 ASL phrases and 5 moods using facial expressions for natural English translation and emotive TTS
- Won second place at regional science fair

### Personal Finance App | *Java, Android Studio, Agile Development, Google Firebase*

Aug 2025 – Present

- Developing an Android app allowing users to manage their budgeting and financial needs
- Building in a team of 6 using Agile Sprints to control scope, manage deadlines, and assign responsibilities
- Implementing Google Firebase for user authentication and data storage, as well as MaterialUI for intuitive design

### Holonomic Auto-Alignment using CV Localization | *C++, Java, ArUco*

Aug 2023 – May 2025

- Applied second-order kinematics and jerk limiting to replicate S-curve profile for discretized holonomic drive
- Fused CV estimates from fiducials with filtered odometry using a state-space model for real-time robot location
- Developed a heuristic for scaling weight of vision data and for latency compensation
- Allowed competition robot to align to any scoring position with < 1cm accuracy regardless of starting state

## TECHNICAL SKILLS

**Computer Languages:** Python, Java, C, C++, Rust, JavaScript, HTML/CSS, Dart, MATLAB

**Frameworks & Libraries:** Tensorflow, scikit-learn, Pytorch, Jupyter, pandas, Matplotlib, OpenCV, ArUco, React

**Developer Tools:** Git, Linux, Docker, Google Firebase, Android Studio

**CAD/CAM:** Fusion 360, SolidWorks, Autodesk Inventor, 3D Printing, CNC Operation

**Foreign Languages:** German (Intermediate - B2), Hungarian (Native)