

# Ethan Krol

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## EDUCATION

### University of Florida

*Bachelor of Science in Computer Science, Minor in Astronomy*

Dean's List | GPA: 4.0

*Expected May 2026*

- **Coursework:** Data Structures and Algorithms, Programming Fundamentals 1 (Python) and 2 (C++), Introduction to Bioinformatics, Computer Organization, Computational Linear Algebra

## TECHNICAL SKILLS

**Languages:** Python, C++, Java, SQL, JavaScript, HTML, CSS, MATLAB, ARM Assembly

**Frameworks and Technologies:** Flask, REST APIs, React, ROS, Linux, Git, Vercel, SFML, Leaflet, SQLite3, Firebase

## EXPERIENCE

### Teaching Assistant for Discrete Structures

August 2024 – Present

*UF Computer & Information Science & Engineering Dept.*

*Gainesville, FL*

- Created problem sets used to independently teach weekly discussion sections for more than 50 students.
- Held weekly office hours available for over 500 students, providing one-on-one assistance with algorithms and proofs.
- Graded 500+ exams, delivering detailed feedback to improve student performance in alignment with course objectives.

### Research Assistant

January 2024 – Present

*Trustworthy Engineered Autonomy Lab*

*Gainesville, FL*

- Assisting graduate students in the development of a camera-based missile guidance system with YOLOv3 in Gazebo to train a visual adversarial defense pattern in an effort to disrupt standard object-detection techniques.
- Constructed and programmed 2 autonomous F1TENTH cars, enabling real-time navigation and obstacle avoidance using LiDAR sensor data to adapt to dynamic environmental changes.
- Developed and tuned 3 self-driving algorithms in Python, leveraging PID and other advanced control methods to optimize vehicle performance on a circular track.
- Containerized ROS2 nodes with Docker, streamlining remote operation of NVIDIA Jetson-based cars via SSH for seamless integration between ROS simulation environment and hardware.

## PROGRAMMING PROJECTS

### Gainesville Crime | JavaScript/HTML/CSS, Flask, SQLite3, LeafletJS, Vercel

July 2024

- Developed a highly customizable web application for visualizing crime hotspots in Gainesville on an interactive heat map.
- Architected RESTful APIs with Flask to efficiently query and process a SQLite3 database of 210,000+ crime incidents.
- Optimized and compared two sorting algorithms to enhance geographic data processing for real-time crime visualization.
- Integrated a flexible map interface, enabling users to tailor searches by specifying circular area, time frame, and location.

### Gator Relator | React, Firebase, Vercel

April 2024

- A React-based networking platform aiming to connect UF students and alumni with common experiences and interests.
- Implemented direct messaging feature through a Firebase Firestore database, indexed by stored user authentication details.

### Animal Care | Unity, C#, OpenAI Chat GPT-3 API

October 2023

- A 2-D style game leveraging Chat GPT-3.5 Turbo to comfort and educate children waiting to receive medical procedures.
- Employed prompt engineering to enable context-aware NPCs capable of generating specific dialogue for varying user details.
- Created custom music, sound effects, character sprites, scene transitions, and a tile map for a polished gameplay experience.
- Awarded **2nd place** overall at 2023 UF Dream Team Engineering Designathon.

### Guitar Chord Predictor | Python, OpenCV, scikit-learn, MediaPipe API

June 2024

- Utilized MediaPipe hand recognition to train a Random Forest model, recognizing eight guitar chords with ~95% accuracy.
- Wrote a Python script to automate data collection by capturing, processing, and storing images with OpenCV.

## CAMPUS INVOLVEMENT

### University of Florida Engineering Ambassadors

January 2024 – Present

*Gainesville, FL*

*Leadership Chair*

*April 2024 – Present*

- Arranged bi-weekly general meeting segments for industry and academic leaders to provide curated insights and guidance.
- Empowered 50+ organization members by hosting professional development events and public speaking opportunities.

*Member*

*January 2024 – Present*

- Directed tours of the College of Engineering for audiences of over 50 prospective students, high-level donors, and faculty.
- Assisted in planning and facilitating Gator Engineering Experience Day for 250 prospective students.

## HONORS AND AWARDS

Addison Pound Engineering Scholarship, Pediatric Cancer Relief Fund Scholarship, Undergraduate Research Scholars Program