Amar Maksumic

New York, NY / Troy, NY

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Summary

Diligent, communicative third-year CS + CSE student. Experienced in **control systems** & communication protocols **(CAN bus, I2C, Serial)** in automotive & robotics fields. Skilled in **computer vision** & **machine learning**. Seeking a **Spring 2024** robotics, embedded systems, or computer engineering **internship**.

Education

Rensselaer Polytechnic Institute (GPA: 3.89) *Troy, NY*

B.S. in Computer Science and Computer Systems Engineering *Aug. 2021 - Expected Dec. 2024*

- Minor in Literature and Creative Writing
- Inducted into Tau Beta Pi (New York Gamma Chapter) of oldest and largest Engineering Honor Society in the United States
- Inducted into the Archimedean Program; a program for Rensselaer Polytechnic Institute's highest achieving students
- Placed on Dean's Honor List for every academic term at Rensselaer Polytechnic Institute
- Relevant Coursework: **Computer Vision**; Architecture, Networks, & OS; Intro Algorithms; **Intro AI**; **Intro ML**; Embedded Control; Computer Components and Operations; Engineering Probability; Discrete Math; Principles of Software; **Signals and Systems**

Experience

Rensselaer Motorsport (RM) Formula SAE Team *Troy, NY*

Powertrain & Control Systems Lead *Jul. 2022 - Present*

- Leading development of RM's first electric powertrain: EMRAX 228 motor with a Cascadia RMS PM100DX motor controller
- Heading development of **custom Vehicle Control Unit with Data Acquisiton and Controls firmware** written in C++
- Developing **linear, closed loop control systems** (Traction Control, Launch Control, Regen Braking) using **Matlab Simulink**
- Using **Kanban** board for task scheduling along with Slack for communication between subsystem members and team members

Full Time Member / Electrical Software Engineering *Mar. 2022 - Jul. 2022*

- Designed wireless telemetry and strain gauge systems to analyze the forces on suspension and help optimize our physics models
- Researched MoTeC CAN bus protocol to implement CAN communication for Arduino boards in the strain gauge system

RPI Robotics *Troy, NY*

Officer *Apr. 2022 - Present*

- Managing scheduling of tasks using **Agile development** model, along with **communication** through Discord and Outlook
- Implementing **ROS2** system for Laser Tag Robots project (iRobot Create3 Roombas that play laser tag)
- Developing control software using knowledge from Embedded Control about **linear control theory** for the array of origami units in RAI
- Restarted RPI Robotics with fellow Officers after a 1.5 year hiatus period: helped increase club size and presence on campus
- **Saved $1,000** in my department by repairing a broken robot in house, instead of sending it back to manufacturer out of warranty

Rensselaer Polytechnic Institute *Troy, NY*

Photonics Undergraduate Research Assistant *May 2023 - Sept. 2023*

- Collected measurements with Thorlabs and Keysight equipment from 224 photonic structures across 14 chips developed by AIM Photonics
- Developed python script to perform analysis on variation in band-pass edges and slow light barriers between related structures

Robotics Undergraduate Research Assistant *Oct. 2022 - May 2023*

- Converted subproblem solutions from "Canonical Subproblems for Robot Inverse Kinematics" to C++ with PhD student Alex Elias
- Tested subproblem efficiency and efficacy with bench-marking library from Google

Portfolio

Vehicle Control Unit for FSAE

- Designing computer hardware addons for Jetson Nano to support up to 40 analog connections and 4 CAN connections
- Orchestrating firmware development by dividing program into **ADT spec classes**, and assigning ADTS to team members for outsourcing
- Creating car model for controls development and testing in MATLAB Simulink

Aquila Heavy (Thrust Vectoring Control model rocket)

- Worked on **embedded systems, telemetry, and PID control** for TVC module on my engineering final-project in high school
- Developed custom serial communication protocol that **reduced latency** between onboard telemetry control unit and TVC control unit
- Used Trello, Google Chat, and Zoom to consult with 8 other students that worked on electrical and mechanical systems for the rocket

Skills

Programming Languages: C, C++, Python, JavaScript, Java

Libraries: NumPy, Pandas, Matplotlib, TensorFlow, Eigen C++, OpenCV, Flask, Tkinter, Node.js

Software: git, MATLAB, Simulink, LTSpice, KiCAD, Onshape, SolidWorks, Siemens NX, VSCode, Eclipse, Microsoft Office

Languages: English (fluent), Croatian (fluent), Bosnian (fluent), Spanish (reading and writing)