Amar Maksumic

New York, NY / Troy, NY

☐ +1 (347) 455-5687 | ✉ amar.maksumich@gmail.com | ⌂ amarmaksumic.github.io | in maksua

Summary

Diligent, communicative second-year CS + CSE student. Experienced in use of control loops and communication protocols (CAN bus, I2C, Serial) for applications in automotive and robotics fields. Skilled in computer vision and machine learning areas. Seeking an automotive, robotics, or embedded systems internship.

Education

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

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

- Minor in Literature and Creative Writing
- 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 Architecture, Networks, and Operating Systems; Intro to Algorithms; Intro to AI; Embedded Control; Computer Components and Operations; Foundations of CS; Data Structures; Engineering Graphics and CAD

Experience

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

Powertrain Lead   *Jul. 2022 - Present*

- Leading development of RM's first electric powertrain: EMRAX 228 motor with a Cascadia RMS PM100DX motor controller
- Developing open and closed loop control systems (Traction Control, Launch Control, Regen Braking) that increase driver control
- Using a Kanban board to assign tasks to and using Slack to communicate with several team members under my leadership
- Setting up and hosting Webex meetings with several subsystems to develop a high-performance car that meets competition regulations

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*

Vice President   *Dec. 2022 - Present*

- Shifting all projects to new Agile development model: decreases production time, encourages design iteration, and increases project quality
- Promoting asynchronous meetings for project groups to improve productivity through individual work followed by check-up meetings
- Personalizing communication with each project lead to develop closer bonds and trust: chats become more productive and informative
- Acquired preliminary building display approval from RPI Engineering Administration to display Robotic Art Installation (RAI) on Campus
- Developing control software using knowledge from Embedded Control about linear control theory for the array of origami units in RAI

Officer   *Apr. 2022 - Dec. 2022*

- Implemented ROS2 system for Laser Tag Robots project (iRobot Create3 Roombas that play laser tag)
- Restarted RPI Robotics with fellow Officers after a 1.5 year hiatus period: helped increase club size and presence on campus

Rensselaer Polytechnic Institute   *Troy, NY*

Undergraduate Research Assistant   *Oct. 2022 - Present*

- Converting subproblem solutions from "Canonical Subproblems for Robot Inverse Kinematics" to C++ with PhD student Alex Elias
- Testing subproblem efficiency with bench-marking and testing subproblem efficacy with various robots on campus

FIRST Robotics Competition Team 2601: the Steel Hawks   *Flushing, NY*

Electrical and Software Engineering Mentor   *Nov. 2021 - Dec 2022*

- Taught "robot code" engineers how the CAN bus system relays data between controller and peripheral units
- Mentored a subsystem of 15 students on how to develop and implement computer vision algorithms and autonomous routines

Portfolio

Swerve Drivetrain

- Designed a holonomic drivetrain system from scratch in OnShape as a prototype project for my FIRST Robotics Competition (FRC) team
- Developed a closed loop control system in Java for both robot orientated and field orientated control of a swerve drivetrain
- I am currently helping my team revitalize this project so they can compete with a refined Swerve Drive robot for the 2023 season

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, LTSpice, KiCAD, Onshape, SolidWorks, Siemens NX, Microsoft Office Suite

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