Joseph Daniel Selvaraaj

jdselvaraaj@gmail.com ● linkedin/josephdanielselvaraaj ● github/jselvaraaj

EDUCATION

University of Massachusetts, Amherst, MA   May 2023

Bachelor of Science, **Computer Science** with Multidisciplinary honors under **Prof. Bruno Castro da Silva**

Bachelor of Science, **Mathematics** with concentration in Statistics and Data Science

Bachelor of Business Administration, **Finance** with concentration in Financial Analyst

GPA: 3.94

RESEARCH EXPERIENCE

*Research Assistant for **Prof. Chengbo Ai** | University of Massachusetts*   Sep 2022 - Jan 2023

- Fine-tuned YoloV5 models for vehicle classification in 2D *LiDAR* scans by running different experiments with wandb.
- Designed efficient algorithms to fit 3D bounding boxes in point cloud data after stitching frames with SLAM algorithms.
- Coded scripts in *ROS* to collect and extract LiDAR data with custom log files in rosbags from Ouster sensors on buses.
- Developed tools for data cleaning, filtering, and exporting point cloud data with *OpenCV* in appropriate formats for labeling.

*Informal Research Assistant for **Andrea Baisero** | PhD student of Prof. Christopher Amato*   Aug 2024 - Nov 2024

- Coded and ran experiments for a variety of partial observable grid world environments in stable baselines and RLlib.
- Helped with ideation of Memory Reactive Policy which uses last observation and learned memory sample for policy inputs.

*Research Assistant for **Prof. Bruno Castro da Silva** | University of Massachusetts*   May 2022 - Oct 2022

- Coded scripts to verify convergence results on consistent learned model in Partially Observable Markov Decision Process.
- Contributed to proving the convergence of reward estimates under the data collecting and evaluation policies for the same.

*Researcher for **Akanksha Atrey** | University of Massachusetts*   Feb 2022 - May 2022

- Processed human time series mobility data of 92 users with missing entries using *Pandas* by discretizing them into bins.
- Evaluated time series models like *Hidden Markov Model* against LSTM for next location prediction with top-k accuracy.

SKILLS

ML Analytics & Other Tools: PyTorch, Pandas, NumPy, ROS, AWS, Docker, Bazel, Unix, Git, wandb

Web Development & Databases: Mongo DB (No SQL), MySQL, Angular, React, RxJS, CI/CD, REST, Jasmine

Programming Languages: TypeScript, Scala, Python, Java, C++, C, MATLAB

HONORS & ACCOLADES

Student Awards | University of Massachusetts

- Chancellor's scholarship
- Multi disciplinary honors student at Commonwealth Honors College, UMass Amherst
- Dean's list (8 semesters)

EXPERIENCE

*Lucid Software | **Software Engineer***   Jun 2023 - Present

- Improved Lucid extension's capabilities by making custom shapes developed by external developers clickable with callback.
- Revamped Lucid's command line tools, used by external developers to build extensions, to be more interactive.
- Developed angular components, including interactive cards for Lucid marketplace, which hosts published third-party apps.
- Streamlined extension publishing process by making an internal webpage, which eliminated working with operations team.

*University of Massachusetts, Amherst | **Resident Assistant***   Feb 2023 - May 2023

- Supported about 30 diverse residents with frequent in-person check-ins and effectively mediated resident conflicts.
- Organized and executed monthly floor events to share campus resources and foster connections among residents.

*University of Massachusetts, Amherst | **Summer Tutor***   May 2022 - June 2022

- Helped student-athletes with concepts in microeconomics and shared strategies to meet deadlines while staying motivated.
- Quizzed, questioned, and engaged students in mastering the course through repetition and helped them with note-taking.

Lucid Software | **Software Engineer Intern**   May 2022 - August 2022
- Remodeled loading logic for 7 pages in the developer dashboard using Angular guards, reducing code duplication.
- Investigated 10 potential metrics to display to developers and implemented the backend in Scala with unit tests.

BuildUMass | **Software Engineer**   Jan 2021 - May 2022
- Built resume parser on AWS Lambda with Docker to handle approx. 100 applications, making selection process scalable.
- Programmed the search feature for finding other users in BUILD web app in React and Express, improving user experience.

COMMUNITY ENGAGEMENT

University of Massachusetts
- UMass Blockchain Club - Sep 2022 - Jan 2023, **Founding team** (approx 15 members)
- Mass FinTech Hub Mentoring Program **Mentee**, 1 of 20 selected from UMass, Brandeis, WPI - Sep 2021 - Dec 2021
- UMass CS **Mentor** - Sep 2021 - Dec 2021
- UMass CyberSecurity Club - Feb 2020 - Dec 2020, **Event Manager** (approx 30 members)
- Isenberg Global Citizens **Volunter** - Aug 2021