

# SHALOM JAISON

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## EDUCATION

### University of Massachusetts - Amherst

Bachelor's, Computer Science

September 2021 - May 2025

GPA: 3.93

- Web Dev, Distributed Applications [Crypto], ML, Computer Vision, OS, Computer Networks, Database Management

### University of Massachusetts - Amherst

Bachelor's, Math (Dual Concentrations: Stats & Actuarial Sci)

September 2021 - May 2025

GPA: 3.93

- Multivariate Calculus, Linear Algebra, Mathematical Finance [Derivative Pricing, Financial Markets], Statistical Analysis

## PROJECTS

### Minutemen Marketplace

South Amherst, MA, USA

- Enhanced user engagement by 30% through the development of prototypes for a highly performant marketplace utilizing design patterns, JavaScript, HTML, and CSS to ensure smooth transitions and intuitive navigation.
- Strengthened backend operations and improved security measures through full-stack development practices by integrating Express.js and PouchDB for user authentication.
- Optimized frontend page navigation for seamless user interaction by prioritizing user authentication security, significantly enhancing user experience.

### Blockchain Simulator with Proof of Work (PoW) and Transaction Validation

South Amherst, MA, USA

- Enhanced blockchain framework's efficiency by 40% by utilizing Python to create a backend system with custom classes for transaction validation, UTXO, and Merkle tree management.
- Improved block validation accuracy by 30% by designing and developing a transaction validation system using Python to simulate blockchain operations with Proof of Work mining.
- Established a reliable transaction validation system that ensured block integrity through effective input/output constraint checks and coinbase minting in order to bolster blockchain security.

### Panoramic Image Stitching

South Amherst, MA, USA

- Enhanced image matching accuracy by 30% in a panoramic image stitching application by implementing Harris Corner Detection and patch-based feature extraction using Python.
- Improved image transformation precision by integrating RANSAC for accurate image transformations and inlier detection, leveraging Python for robust processing.

### Leap Drive - Jumping Robot - [Link to project](#)

South Amherst, MA, USA

- Enhanced robot's jumping capability by designing a mechanical system for Leap Drive using springs and a pulley system, ensuring precise movement.
- Improved movement precision and control for robotic jumps by integrating an ESP32 chip, ensuring accurate execution of jumps in the robot.
- Created detailed 3D models for effective prototyping by utilizing Fusion360 and TinkerCAD, streamlining the design process of the Leap Drive jumping robot.

### Random Forest Algorithm Implementation and Performance Evaluation

- Enhanced algorithm efficiency by 30% through the development of a custom Random Forest with bootstrap sampling and cross-validation, focusing on performance optimization for complex datasets.
- Achieved scalable data processing for varied data types by implementing a flexible Decision Tree algorithm that supports both categorical and numerical data with adaptable stopping criteria using Python.

## PROFESSIONAL EXPERIENCE

### UMass CICS

ML/RL Research Assistant

North Amherst, MA, USA

June 2024 - August 2024

- Enhanced decision-making by 25% through algorithm development of a dynamic tau adaptation algorithm in the TLA framework for Reinforcement Learning, utilizing Python for optimal Q-table reconstructions across diverse state conditions.
- Collaborated with the PhD advisor and research team in weekly meetings, facilitating enhanced collaboration and research quality through contributions to literary reviews and experimental design.
- Utilized strong communication skills to effectively convey complex concepts and research outcomes to over 30 peers, graduate students, and faculty, which led to recognition for advancing RL methods.

### UMass Student Union

Information Desk Assistant

North Amherst, MA, USA

September 2023 - Present

- Collaborated with cross-functional teams to deliver efficient customer service, ensuring timely, accurate responses and high-quality interactions.
- Streamlined operations by implementing systems to manage reservations, sensitive data, and paperwork, enhancing organizational efficiency and problem-solving.

## SKILLS

**Tech Stack:** Express.js, Postman, Figma, Node.js, Python, JavaScript, HTML/CSS, Solidity, C/C++, C#, Linux/Unix, React.js, SQL, Java, NumPy, Git

**Languages:** Hindi, Malayalam, English