

# MADHU LAKKOJU

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## Education

**Stony Brook University, State University of New York**

**Aug 2023 – Dec 2024 (Expected)**

*Masters of Science in Computer Science*

*Stony Brook, NY, USA*

**Relevant Coursework:** Distributed & Decentralized Systems, Operating Systems, Hybrid Systems, Algorithms

**Gokaraju Rangaraju Institute of Engineering & Technology, JNTU**

**Aug 2017 – Jul 2021**

*Bachelor of Technology in Computer Science*

*Hyderabad, India*

**Relevant Coursework:** Cloud computing, Databases, Web Technologies & Security, Operating Systems, Networks

## Technical Skills

**Languages:** Java, C#, Core Java, Python, JavaScript, Typescript, SQL, NoSQL, HTML/CSS

**Frameworks:** Spring Boot, React, Angular, .NET Core, JUnit, Kafka, RabbitMQ, Docker, MySQL, PostgreSQL

**Technologies:** Amazon AWS, Microsoft Power Platform, Azure cloud, Dynamics 365 CE, Git, GraphQL

**Interests:** Web Development, Distributed Systems, Object Oriented Programming, Redis, REST, Web3

**Certifications:** MTA Networking Fundamentals, PCAP: Python, Coursera: Machine Learning, Data Structures

## Work Experience

**Graduate Student Researcher**

**Jan 2024 – Present**

*Stony Brook University*

*Stony Brook, NY*

- Researching **Adaptive Blockchain Systems** 🌀 under supervision of **Prof. Mohammad Javad Amiri** 🌀
- Implemented Adaptivity in Transaction management addressing Byzantine failures using **BFT protocols** through Multi-Threading and State Machine Replication with 36 combinations in exploration.
- **Improved Throughput by 27%** over fixed architectures using a Reinforcement Learning Agent that learns optimal architecture protocol combinations by considering features such as contention, failures & commit operations in episodes.
- **Tech Stack:** Java, Distributed Systems, Threads, Machine Learning, Python, GRPC, TMux, YAML

**Software Developer**

**Aug 2021 – Aug 2023**

*Standard Life UK | Tata Consultancy Services*

*Hyderabad, India*

- Contributed to **Standard Life UK**, enhancing major customer modules: Savings, Retirement, Pensions, and Payments.
- Collaborated with the UI/UX team to refine responsiveness practices for seamless functionality across devices for critical pages including **Retirement Calculator**, **Retirement Planner**, Charges, Dashboard, and SLB Dynamic tiles.
- Optimized SQL Queries and Angular UI, significantly **reducing load time from 3.5 to 1.8 seconds** with efficient data structures, async calls, and caching to improve experience of **12 million customers** & enhanced reliability by 22%.
- Designed and deployed Microservices architecture with REST API, improving overall website performance by over **30%** more than legacy MVC implementations (Metrics: FCP, FMP, LCP, load time, HTTP requests, errors).
- Designed and implemented event-driven features with **AWS Lambda, SNS & SQS** improving performance by 15-20% and custom **Glue ETL jobs** to perform data synchronizations between customer app and internal CRM systems.
- Implemented Magnolia approach using dynamic text from multiple JSON files on UI led to improved content load time (FCP, FMP) via better browser caching and faster deployment of new updates.
- Enhanced SEO strategies and accessibility in the latest UI design using keywords, backlinks, meta tags, alt, and Google Analytics Taggings with target UI/UX.
- Employed Agile methods, emphasizing quality enhancement with continuous **code reviews** and **optimizations** during iterative product development in a cross-functional team.
- **Tech Stack:** Angular, Typescript, Javascript, JQuery, Java, REST API, Spring Boot, AWS, SQL

**Full Stack Developer Intern**

**Mar 2021 – May 2021**

*Tata Consultancy Services*

*Chennai, India*

- Built a Chat service with Web sockets, WebRTC, SSO, and OAuth Services on Angular JS UI and Hibernate ORM.
- Deployed these Service and UI packages in **Amazon Elastic Compute Cloud (EC2)** using CI/CD pipelines
- **Tech Stack:** AngularJS, Javascript, Java, AWS, SQL, Hibernate

**CRM Developer**

**Jan 2020 – Feb 2021**

*D365 Solutions Ltd*

*Remote*

- Leveraged Dataverse, actions, scheduled jobs, and Azure integration in the Customer Engagement module for Case Management, automation tasks, and building Reports and visualizations in Power BI.
- Integrated efficient C# plugins & Power Automate Flows to send acknowledgments reducing manual work by 85-90%
- Created Power Portals to work closely with CRM using HTML, JavaScript, DOM, CSS, fetchXML, Ajax, and jQuery.
- Developed 100% automated Data migration and replication from CWC & PE through Azure Web jobs and REST APIs
- **Tech Stack:** Microsoft Power Platform, Dynamics CRM, C#, .NET Core, Javascript, HTML, Azure

## Projects

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### Leaf Growth Analysis | *Python, OpenCV, Machine Learning* | Advisor: Dr. Y Krishna Bhargavi

- Analyzed leaf's apparent characteristics to anticipate the growth phase using classifiers like Naïve Bayes, Support Vector Machine, and Decision Trees with a **Weighted Voting Classifier** to increase **accuracy by 14%**.
- Incorporated a Support Queue for Reinforcement Learning along with Digital Image acquisition - OTSU Thresholding, Gaussian Blur, and segmentation to ascertain the features that increased the model's **accuracy from 51% to 82%**.

### Incremental Web Crawler | *AWS, Lambda, Dynamo DB, CDK, Java, React JS, SQL, AWS SDK*

- Developed and deployed **Web Explorer**, an advanced web crawling application leveraging AWS Lambda for scalable function execution, DynamoDB, S3 & RDS for efficient storage, ElastiCache, SQS and Jsoup.
- Implemented robust rate-limiting to reduce 429 code on Too Many Requests to a server and optimized performance resulting in a **30% increase in crawl efficiency** and response times.

### Expense Management System | *React JS, Spring Boot, Mongo DB, Hibernate, Java*

- Multi-tier Full-Stack Web Application to display reports & visualizations on **React UI** using **MongoDB NoSQL** and **Spring Boot** to store and process transactions. Hosted on the Heroku server through CI/CD pipelines
- Implemented features with Spring Security library and developed custom parsers for the data import/export

## Awards and Volunteer Experience

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- Active Project member at Advanced Academic Centre ([AAC](#)), Computer Society ([CSI](#)) & Challenge ACI organizers
- At **Wellness Org** NGO, supported education of underprivileged children by raising funds from potential sponsors.