

Aryan Kumar Raja

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Location: Champaign, IL, USA

EDUCATION

- **University of Illinois Urbana-Champaign** Champaign-Urbana, IL, USA
Master's - Computer Science; GPA: 3.94/4.00
August 2022 - December 2023
Courses: Intro to Data Mining, Applied Parallel Programming, Software Engineering, Applied Machine Learning, Database Systems
- **Manipal Institute of Technology** Manipal, Karnataka, India
Bachelor's - Computer Science; CGPA: 9.55/10
July 2018 - July 2022

SKILLS SUMMARY

- **Languages :** Java, C/C++, SQL, JavaScript, TypeScript, Python, Swift
- **Frameworks:** ReactJS, Angular, Pytorch, CUDA
- **Others:** Git, Devops, Google Cloud, AWS, Unix, Bash Scripting, Docker, Jenkins, Android, iOS, HTML, CSS

EXPERIENCE

- **Amazon, Lab126** New York City, NY, USA
Software Engineering Intern (Full-time)
May 2023 - Aug 2023
 - **Suspicious Event Notification System:**
 - Analyses **Cloudtrail** events and notifies resource owners of unauthorized accesses.
 - Designed and implemented CloudWatch Output Processor architecture that allows cross-account notification using **AWS EventBridge, Lambda, SNS and DynamoDB**.
- **Bazaarvoice** Bengaluru, Karnataka, India
Software Engineering Intern (Full-time)
Jan 2022 - July 2022
 - **AngularJS to Angular Migration:**
 - Migrated an internal application to Angular, making the application 5x faster.
 - Tasks: Rewrote codebase in **TypeScript**, added entire suite of SMS channel functionalities, developed scalable cloud infrastructure using **AWS S3, AWS Route53, AWS Cloudfront**, and **Kubernetes**, used and configured **NGINX** for **APIs**, refactored code and API calls, did bug fixes
 - **Streamlining Development to Deployment:**
 - Helped reduce development to deployment time by 20%.
 - Containerized applications using **Docker** for realizing environment parity and deployed them on **Kubernetes** to attain scalability.
 - Created **Jenkins** jobs for Production and QA environment to **dockerize** and deploy application.
 - Developed **BASH** scripts to dockerize and deploy applications from local.
 - **Developing APIs:**
 - Developed using **AWS Lambda** and **AWS API Gateway**.
 - Created APIs in **Python** to fetch data from **AWS S3 bucket** using **boto** and return it as response based on path parameters provided.

PROJECTS

- **JelloDesk - MongoDB, ExpressJS, ReactJS, NodeJS (jellodesk.com):**
 - Job application tracker build using the MERN Stack.
 - Uses JWT to authenticate CRUD actions for a user.
 - Uses advanced React features: React States, Reducer, Effect, Context, Router, and others.
 - Also includes security packages like Helmet, xss-clean, express-mongo-sanitize, and express-rate-limit to secure server.
 - Source code: github.com/Jello
- **House Prices Prediction with Advanced Regression Techniques - Pytorch, Seaborn, Pandas, Sklearn, SciPy (Link):**
 - Conducted EDA and rigorous data cleaning, transforming 81 features with techniques like Box-Cox transformations and one-hot encoding for improved model accuracy.
 - Evaluated multiple regression models, with XGB Regressor achieving the best RMSE of 25,661.844 and a Stacked Regressor(Lasso, ElasticNet, LGBM, XGB, Random Forest) yielding a competitive Kaggle score of 0.12590.
- **Mp4 Steganography - Python, PyCUDA, C, OpenCV (github.com/mp4_stego) :**
 - Based on paper 'MP4 Video Steganography in Wavelet Domain' (DOI: 10.1109/ICACCI.2017.8126010).
 - Performs accelerated Steganography(image and audio) using Parallel programming framework **CUDA**
 - Used command-line tool **FFMPEG** to do audio processing: extracting carrier audio from MP4 and combining the audio back
 - Used Python libraries OpenCV, Numpy for image and video processing
- **KMP CUDA - C++, Cuda, Bash (github.com/KMP-Cuda):**
 - Implemented **Zero-Copy** and **Unified Memory** architecture for reduced DRAM bandwidth, leading to 20% and 58% speedup over base KMP, resulting Unified memory approach to be the final submission.
 - Developed evaluation dataset: wrote scripts to download raw data from NCBI and create test string data of required character length.
- **HackerNews iOS App - SwiftUI (github.com/HackerNews):**
 - Utilized SwiftUI framework to create a user-friendly interface.
 - Integrated with HackerNews API to fetch and utilized WKWebView to display the news feed.