MOHAMMED ALAM

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EDUCATION

Columbia University, The Fu Foundation School of Engineering and Applied Science   Expected May 2027
Candidate for Bachelor of Science – Computer Science, GPA: 3.1
Relevant Coursework: Data Structures & Algorithms, Java Programming, Python Programming, C Programming
Awards: Rocco & Catherine Commisso Scholar, FTC Software Control Award, National Science Honors Society

SKILLS

Programming Languages & Frameworks: JavaScript, TypeScript, Java, Python, React, Node.js, Express.js
Cloud Computing & Databases: Google Cloud Platform, AWS (EC2), MongoDB, PostgreSQL, mySQL, Firebase, Redis
Development Tools: Git, Docker

EXPERIENCE

Software Engineer   **New York, NY**
Freelancer   *September 2019- Present*
- Developed and implemented custom scalable web applications and bots for Discord and Twitch
- Scaled back-end infrastructure to efficiently process and manage millions of daily messages, supporting a user base of over 12,000,000 across 13,000+ unique communities, tailored too 100+ clients

Software Engineering Fellow   **New York, NY**
Headstarter AI   *July 2024 - September 2024*
- Built 5+ AI apps and APIs using Next.js, OpenAI, Pinecone, and Stripe; mentored by FAANG engineers
- Won a hackathon hosted by a TikTok hiring manager for a TikTok clone earning a referral for internship opportunities

Engineering Mentor   **Bronx, NY**
FTC Robotics   *September 2023 - June 2024*
- Guided the FTC Robotics team in advanced Java and technical documentation, enhancing understanding of software architecture
- Instructed on object-oriented programming, fostering development of complex algorithms for robotics

PROJECTS

Blogify | NodeJS, ReactJS, NextJS, Firebase, mySQL, Socket.IO
- Constructed a modern blogging platform featuring a TikTok-style interface and Twitter-like functionality for dynamic text and image posting
- Integrated MySQL for efficient data storage and retrieval, and implemented Firebase for secure user authentication and management
- Deployed Socket.IO for real-time notifications, enhancing user engagement with instant updates on interactions

Guess The Number | NodeJS, MongoDB, Redis
- Created an Discord application enabling users start guessing games in designated channels within their servers
- Employed MongoDB for persistent data storage, efficiently managing server and game data
- Utilized Redis and local in-memory cache to optimize data retrieval and handle high volume of messages across thousands of active games spanning over 13,000 guilds with a user base exceeding 12,000,000

Discord Metric System | NodeJS, ExpressJS, ReactJS, Redis, MongoDB
- Engineered an application for real-time metrics collection, using Discords API, and visualization (MERN Stack)
- Streamlined a multi-layered data processing and caching pipeline using Redis, local in-memory cache, and MongoDB to handle high-throughput message data from Discord servers, increasing read/write speeds by over 90% (1-10ms)
- Implemented RESTful APIs using Express.js to access real-time metrics data, ensuring seamless updates and visualization of metrics on the ReactJS website

Whack-A-Mole | NodeJS, ExpressJS, ReactJS, Socket.IO
- Designed a real-time game interface synchronized with physical sensors and motors connected to an Arduino board
- Leveraged Node.js and Express.js to establish WebSocket connections and manage bidirectional data transmission between the physical game setup and the React.js frontend
- Implemented a responsive user interface using React.js, synchronized with the real-time game events via a Socket.IO server for dynamic score tracking, timer updates, and music playback