Madhavan **R.P.**

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Education

Iowa State University — *Ames, Iowa*
PHD (MS) - COMPUTER SCIENCE, GPA 3.83/4.00 — *Jul 2022*

Anna University — *Chennai, India*
BACHELOR OF ENGINEERING - COMPUTER SCIENCE AND ENGINEERING — *May 2011*

Experience

Amazon — *SEA, WA*
SOFTWARE DEVELOPMENT ENGINEER — *Jul. 2022 - present*
- Developed microservices that delivered high quality sports streaming content to Prime Video customers.
- Utilized Amazon ECS, DynamoDB, SQS, and SNS to achieve high throughput and scalability.
- Developed REST APIs serving 20 GB of sports data, processing 30k RPS with a latency of 25ms.
- Programmed a feature that enabled personalized Ads recommendation to streaming video.
- Coordinated end to end testing strategy across multiple teams to validate Ads recommendation.

Iowa State University — *Ames, Iowa*
GRADUATE RESEARCHER — *Jul. 2017-Jul. 2022*
- Researched novel problems on how to maximally spread information in large social networks.
- Created a 0.63-approximate probabilistic algorithm to spread information in adversarial social networks.
- Designed an algorithm that improved information spread by 12% while running 100x faster.
- Implemented C++ programs to operate on graphs containing 1.6 million nodes and 30 million edges.
- Received the Atanasoff Award (1 of 193 students) in recognition of academic and research performance.
- Head Teaching Assistant for Algorithms course consisting of 300 students and managed 10 TAs.

Schrödinger — *NYC, NY*
BACKEND ENGINEER - INTERN — *Jun. 2021 - Aug. 2021*
- Designed and developed a Flask microservice with a PostgreSQL database for storing and retrieving key-value pairs.
- Leveraged Apache Kafka to enable asynchronous message communication through Kafka topics.
- Seamlessly replaced an existing legacy service with the new microservice ensuring improved scalability.
- Documented architectural designs, API specifications, and deployment processes for knowledge sharing.

NP Compete Technologies — *Chennai, India*
TECHNICAL STAFF MEMBER — *Oct. 2011-Sept. 2014*
- Developed an Android SDK that enabled businesses to update their mobile applications' UI in real-time.
- Leveraged Aspect Oriented Programming to log user actions, enabling modification of UI elements for conducting A/B testing on live mobile applications.
- Designed and executed a comprehensive testing strategy, including module-level JUnit tests and definition of product-level use case scenarios.
- Defined and created a novel Contact Management application that enabled users to easily access and manage their contacts across various social networks and platforms.
- Lead a team of 4 programmers, overseeing software design decisions, and adherence to coding standards.
- Initiated team-wide peer code review practices that contributed to accelerated development.

Skills

Languages/Tools Java, Python, C++, Git, SQL, UNIX Shell, Docker
Areas of Proficiency Algorithm Design, Graph-Based & Randomized Algorithms, Microservices

Publications

2018 **IEEE BigData**, "Influence Maximization in Social Networks With Non-Target Constraints"

2020 **IEEE ASONAM**, "Measuring the Impact of Influence on Individuals: Roadmap to Quantifying Attitude"

2023 **Uncertainy in AI**, "Maximizing Submodular Functions under Submodular Constraints"