Madhavan **R.Padmanabhan**

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Education

Iowa State University   *Ames, Iowa*
PhD (MS) - Computer Science, GPA 3.83/4.00   *May 2022 (expected)*

Anna University   *Chennai, India*
Bachelor of Engineering - Computer Science and Engineering   *May 2011*

Skills

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

Experience

Iowa State University   *Ames, Iowa*
Graduate Researcher   *July. 2017-present*

- Researching novel problems on how to maximally spread information in large social networks.
- Created an efficient probabilistic algorithm to spread information to targeted users while avoiding adversaries - Constrained Influence Maximization (CIM) problem.
- Designed an optimization algorithm that improved information spread by 12% while running nearly 100 times faster than the existing state of the art solution.
- Designed a mathematical model for information spread that distinguised between *strongly* and *weakly* influenced users in social networks.
- Achieved high information spread on graphs with 1.6 million nodes and 30 million edges by efficiently programming the graph algorithms in C++ .
- Served as a Teaching Assistant in several courses including Design and Analysis of Algorithms, Programming in Java.

Schrödinger   *NYC, NY*
Backend Engineer - Intern   *Jun. 2021 - Aug. 2021*

- Built a microservice that efficiently managed storage and retrieval of key-value pairs.
- Implemented a Flask application with a Postgres database that exposed a REST API, enabling easy integration with other services.
- Integrated the microservice with Apache Kafka by communicating messages, storing data on Kafka Topics.
- Created Docker images for the components of the microservice and deployed the application using Kubernetes and Tilt.

NP Compete Technologies   *Chennai, India*
Technical Staff Member   *Oct. 2011-Sept. 2014*

- Developed an Android SDK that enabled businesses to detect user actions and make dynamic UI changes to their existing mobile applications in real-time.
- Designed and implemented a comprehensive testing strategy by writing module-level JUnit tests and defining 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 by managing product features, software design choices, coding standards.
- Implemented a Flask application that collected user's contacts via OAuth and stored it in user's Dropbox.
- Initiated a team-wide peer code review practice that contributed to accelerated development.

Publications and Awards

2018	**Atanasoff Award Winner,**	In recognition of academic research performance (1 of 193 graduate students)
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"
2021	**SNAM Journal,**	"Measuring the Impact of Influence on Individuals: Roadmap to Quantifying Attitude"