

Manan Talwar

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EDUCATION

University of Massachusetts Amherst

Master of Science in Computer Science

January 2023 – (Expected) May 2024

- *GPA*: 4.0/4.0
- *Coursework*: Advanced Machine Learning, Biologically Inspired Deep Learning, Intelligent Tutoring Systems, Quantum Error Correction, Advanced Information Assurance, Technical Project Management, Research Methods in Empirical Computer Science

Bachelor of Science in Computer Science & Mathematics

August 2020 - December 2022

- *GPA*: 3.92/4.0 (Cum Laude)
- *Coursework*: Object Oriented Programming, Data Structures & Algorithms, Computer Systems Principles, Advanced Algorithm Design, Machine Learning, Health Informatics, Data Science, Information Retrieval, Software Engineering, Web Programming
- *Honors*: Chancellor's Merit Award, Dean's List Award, Dr. Howard Smith Research Award

RELEVANT EXPERIENCE

Technical Project Manager

January 2023 - Present

Learning Resource Center & Office of Undergraduate Research and Studies, UMass Amherst

- Managed a cross-functional team of 3 software developers, 2 Information Technology Assistants, 4 office assistants, 2 graduate student assistants, and 3 department heads under the Agile Scrum framework utilizing Asana, Confluence, and GitHub.
- Spearheaded the development of a scheduling and payroll management system serving 500+ employees utilizing Python, Django, Docker, and AWS reducing the payroll workflow overhead by 55% and scheduling overheads by 84%.
- Steered the development of a web application enhancing access to research resources across 90+ UMass Amherst departments by 75% from inception to launch for 23,146 undergraduate students utilizing PHP, HTML, CSS, JavaScript, and Drupal 9.
- Orchestrated the development of a web application for posting and exploring research opportunities at UMass Amherst targeting 7,814 graduate students utilizing ReactJS, NodeJS, JavaScript and AWS.

Graduate Student Researcher

February 2023 – May 2023

Biologically Inspired Neural Dynamical Systems Lab, UMass Amherst

- Proposed and implemented a novel randomized semi-offline learning algorithm for class incremental learning comprising of Multi-Layer Perceptron hypernetwork, a Resnet-32 target network and a Variational Autoencoder utilizing PyTorch and Python.
- Evaluated the proposed framework on the Class Incremental Learning benchmark, achieving top-5 accuracy comparable to iCarl and Dynamically Expandable Representations and outperforming regularization based continual learning methods.
- Demonstrated through careful experiments that sleep phases in the algorithm enhance the performance by a factor of 16.2% and that the sleep frequency is directly related to improvements in accuracy.

Software Engineer Apprentice

September 2022 – December 2022

ISO New England & Manning College of Information & Computer Sciences, UMass Amherst

- Engineered a dashboard to summarize and visualize client's time series electric grid data using ReactJS, MongoDB, and Highcharts library enhancing user experience and operational efficiency for 50+ department employees.
- Developed a Graphical User interface (GUI) that facilitates comparison, modeling, and analysis of electric grid data for 100+ nodes in the electric power grid across New England using ReactJS, NodeJS, MongoDB, a RESTful API, and Prisma.
- Liaised with the Product Manager and ISO's Market Development Team to analyze requirements, propose a cost and time optimized Minimum Viable Product (MVP), brainstorm use cases, draft user stories, and propose an efficient solution.

Data Science Intern

May 2022 - August 2022

Center for Data Science, UMass Amherst

- Trained a text classification model based on RoBERTa on an annotated dataset of 7000+ app reviews to predict if an app is safe or unsafe utilizing SpaCy and Python achieving high performance with an NDCG of 0.91 and a mean average precision of 0.91.
- Integrated the model into an end-to-end pipeline running on AWS, utilizing two self-developed web scrapers to retrieve user review data, establishing a workflow allowing for new reviews to be scored on a weekly basis.

Software & Business Developer

September 2021 - December 2022

BUILD UMass

- Managed a cross-functional team of 6 software developers, 2 business developers, and 4 client representatives across 3 Natural Language Processing (NLP) projects (NDA protected) under the Agile Scrum framework utilizing Jira and Trello.
- Liaised with the product managers and the client in redeveloping a client's Django CRM web application utilizing ReactJS and NodeJS and developing a RESTful API, enhancing their user base by approximately 3000 new users in the first month.
- Conceptualized a business and monetization model for an early-stage CRM startup in consultation with the stakeholders boosting their initial revenue by 43%.

SKILLS

Languages: Python, Java, C/C++, C#, JavaScript/TypeScript, SQL, MATLAB

Frameworks: ReactJS, NodeJS, Flask, Django, PyTorch, Keras, TensorFlow, Bootstrap, SQL, Git, LaTeX, JUnit, Pytest

Technologies: Linux, AWS, Docker, PostgreSQL, MongoDB, Google Cloud, GitHub, Figma, CSS3, Prisma

Competencies: Leadership, Research, Communication, Collaboration, Time Management, Critical Thinking, Problem Solving

EXTRACURRICULAR ENGAGEMENTS

UMass ACM (Executive Member & Design Secretary), HackUMass IX (Organizer and Tech Lead), Isenberg Innovation and Entrepreneurship Scholar, UMass Data Science Club