

Arul Murugan

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EDUCATION

UC Berkeley

Masters in Information Management and Systems

Berkeley, CA

Aug. 2025 – Present

BITS Pilani

Bachelor of Engineering in Chemical Engineering

Goa, India

Aug. 2018 – May 2022

- Earned a First Division Degree
- Recipient of Merit-Cum Need Scholarship
- Student-Faculty Committee Representative

PUBLICATIONS

- * Tranchero, M., Brenninkmeijer, C.-F., **Murugan, A.**, & Nagaraj, A. (2026). Simulating strategic interactions with AI agents. *Strategic Management Journal*. doi:10.1002/smj.70112

CONFERENCE AND WORKSHOP ACCEPTANCES

- * Fan, J., **Murugan, A.**, Krishnan, S., & Nagaraj, A. (2026). Interpreting and Steering LLM Agents for Social Simulations. *NBER AI and Economic Measurement Conference, Spring 2026*.
- * **Murugan, A.** (2026). The Verification Bottleneck: Managing Trust in Post-AGI Science. *Post-AGI Science and Society Workshop, ICLR 2026*.
- * **Murugan, A.**, Mumtaz, S., & Nagaraj, A. (2026). Silicon Reviewers: Simulating Expert Panels to Test Funding Mechanisms. *Post-AGI Science and Society Workshop, ICLR 2026*.

WORKING PAPERS AND PREPRINTS

- * **Murugan, A.**, Aguirre, T., Nagaraj, A., & Bommasani, R. (2026). The Jagged Global Economy: Frontier AI Unevenly Exposes National Economies. arXiv:2607.05404.

ACADEMIC COURSES

Foundations for Beneficial AI, Applied Natural Language Processing, Post-Training AI, Information Law and Policy, Social Psychology and Information technology, and AI Interpretability

EXPERIENCE

Research Fellow

Jul. 2024 – Aug. 2025

Data Innovation Lab, UC Berkeley

California, USA

- * Implemented AI Agent Simulations: Designed and coded a complex multi-agent simulation workflow to study the "streetlight effect," including defining game rules, agent action spaces, environments, and rewards; ran experiments and validated results that aligned with human behavior, **enabling novel extensions**
- * Developed a No-Code Simulation Platform: Built a Generative AI-powered no-code platform for researchers, simplifying the process of designing and running multi-agent simulations for diverse experimental scenarios
- * Leveraged Language Models for Large-Scale Data Processing: Automated the extraction and processing of 50,000 complex biological pathway images using language models, implementing parallelized workflows on the cloud via SSH to handle large-scale data efficiently; performed data cleaning, transformation, and pre-processing to prepare the datasets for downstream analysis, facilitating the study of theoretical influences on innovation
- * Applied Econometric Analysis: Initiated econometric modeling of large datasets derived from biological pathway analyses, contributing to a deeper understanding of innovation dynamics
- * Investigating Mechanistic Interpretability of LLMs: Currently leveraging Sparse Auto-Encoders (SAE) to analyze the internal mechanisms of large language models (LLMs), focusing on feature steering within model internals; comparing results with traditional prompting and fine-tuning methods to better understand model behavior and evaluate effectiveness

Founding Engineer

May. 2022 – Jun. 2024

Photon Insights, Inc.

Pennsylvania, USA

- * Helped rapidly build the MVP along with the founder, which was used to raise funding of **\$2mn**
- * Information Retrieval: Engineered advanced web and social media scrapers, optimizing data processing
- * Backend: Developed API endpoints using FastAPI, built server-less applications and deployed on AWS Lambda
- * Analytics: Leveraged MixPanel and Metabase to obtain App Statistics and mitigate customer pain points; also performed case studies using the Photon tool for early warning detection
- * Machine Learning: Evaluated state-of-the-art models to develop an optimal ensemble for sentiment detection and summarization; worked with embeddings and vector databases to create LLM-based applications and curated high-quality diverse datasets for custom model fine-tuning
- * Photon Insights is an AI-driven platform that provides valuable insights from large sets of unstructured data, helping businesses make data-driven decisions with confidence

Research Intern

Jan. 2022 – Apr. 2022

Woodstock Fund

Dubai, UAE

- * Researched various dynamics in the crypto space with a focus on the Decentralized Finance protocols
- * Meticulously vetted and leveraged grants, hackathons, and accelerator programs to find early-stage companies as per the fund's thesis and built a network of over **50** sources
- * Connected with **10+** prospective investments and entrepreneurs on calls, carried out extensive due diligence on their product, business plan, go-to-market strategy, token economics, team, and competitive position
- * Woodstock is an Emerging Technology Investment Firm; it invests in early and growth stage Web3.0 companies

WorldQuant LLC

Feb. 2019 – Oct. 2019

Research Consultant

Mumbai, India

- * Implemented research papers into trading strategies using diverse datasets, which were utilized by fund managers
- * Designed High-Sharpe, robust, and unique long-short equity models by using statistical arbitrage modeling; back-tested on historical data of 10 years
- * WorldQuant is an international hedge fund and quantitative investment management firm

POSITIONS OF RESPONSIBILITY

BITS Goa Consulting Club

BITS Pilani, Goa

Partner - Business Studies

May 2020 – Apr 2021

- * Co-founded Consulting Club; led initiatives like Guest Lectures and Problem-Solving Tests for **60** of my peers
- * Partnered with IIM Calcutta and IIM Lucknow Consulting Clubs for live projects and knowledge sharing
- * Taught Strategy Consulting and Business Analytics course as an instructor for the Center for Technical Education

COMPETITIONS

Alpha Quality Program, July 2019

- * Achieved a Global rank of **11th** and National rank of **2nd** in Alpha Quality Program
- * The AQP is a highly competitive event conducted by WorldQuant LLC, involving research consultants globally. Participants are required to submit an in-depth report detailing their most effective alpha model in quantitative finance

EXTRA-CURRICULAR ACTIVITIES

Swimming

- * Engaged in competitive swimming for seven years, represented my district in prestigious competitions such as the Tamil Nadu state meets and Chief Minister's Trophy
- * Accomplishments: Secured several State-Level, Regional-Level, and District-Level medals, highlighting a consistent record of exceptional performance across various competitions

TECHNICAL SKILLS

Languages: Python, C/C++, SQL (MySQL), R

Frameworks: EDSL, Flask, FastAPI, SpaCy, NLTK

Tools: Git, Docker, AWS, MixPanel, Metabase, Postman

LLMs: OpenAI, LLama, Mistral, HuggingFace