Arul Murugan

(91)-8870202273 | arulmabr@gmail.com | linkedin.com/in/-arul-murugan/

EDUCATION

UC Berkeley   Berkeley, CA
Masters in Information Management and Systems   *Aug. 2025 – Present*

BITS Pilani   Goa, India
Bachelor of Engineering in Chemical Engineering   *Aug. 2018 – May 2022*
- Earned a First Division Degree
- Recipient of Merit-Cum Need Scholarship
- Student-Faculty Committee Representative

WORKING PAPERS

* Tranchero, M., Brenninkmeijer, C. F., **Murugan, A.**, & Nagaraj, A. (2024). Theorizing with Large Language Models (No. w33033). National Bureau of Economic Research.

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

Associate Product Manager Intern
Jul. 2021 – Dec. 2021

BrightCHAMPS
Bangalore, India
* Worked on various automation projects to streamline operations and product delivery, including webpage scraping, data extraction from Instagram, and Certificate generation, cutting down 20+ hours/week cumulatively
* Increased the demo completion and overall conversion rate by 17% by reducing the friction points
* BrightChamps is a global ed-tech company that provides classes on coding, and robotics to children

Queen Mary University of London
May. 2021 – Jul. 2021

Research Intern
London, UK
* Collaborated with Dr. Vimal Balasubramaniam to enhance an R statistical package for finance and econometrics event study analysis, integrating machine learning algorithms to boost modeling accuracy and efficiency
* Developed an R script for analyzing NIFTY50 data, optimizing calculations of abnormal returns

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