

ARUN PATRO

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EDUCATION

NYU Courant Institute of Mathematical Sciences

Masters in Computer Science

Sep 2022 – May 2024

- **Key Courses:** NLP, Programming Languages, Bayesian Machine Learning, Deep Reinforcement Learning, Graphics, Multi-core

Indian Institute of Technology, Kharagpur

B.Tech. + M.Tech. in Electrical Engineering (Signal Processing)

Jul 2013 – Apr 2018

- **Key Courses:** Image Processing, Machine Learning, Deep Learning, Digital Signal Processing, Optimization, Copyright Law

INDUSTRY EXPERIENCE

Ramp

Software Engineer, Applied AI and Employee Experience

Jun 2024 - Now

New York City, USA

- **Receipts:** Receipt Automation using Browsers - automates 3% of all receipts. Built the founding platform for browser automation infra, egress control proxy, liveview, and a plaid-style user-credential store for authenticated web-scraping
- **Product:** Agentic document OCR - Invoices, Receipts, Contracts, Balance Sheets and Cashflows. Expense Policy QA with RAG, Autocomplete for Expense Reports, AI Tax Capture and Coding
- **Internal:** In house AI Code Reviewer scanning for vulnerabilities and best practices, Daily AI summaries of Gong Calls - watching for Love/Hate used by Marketing and CXOs for realtime customer sentiment
- **Applied AI Infra:** Centralized the LLM proxy for structured outputs, OCR and embedding services at Ramp capturing 99% LLM calls.

Normal Computing

Jun 2023 - Dec 2023

ML Resident

New York City, USA

- **Branches:** Built a framework to visualize advanced reasoning and planning algorithms like Tree Search with LLMs. Worked on *Tree-of-Thought + Reflexion* style planning algorithms for objective problem solving.
- **Verilog Code Gen:** Explored LLMs for Verilog Code Generation using prompting, constrained generation, execution feedback and reinforcement learning to solve the VerilogEval dataset.

Meesho

Nov 2021 - Aug 2022

Bangalore, India

Data Scientist - II

- **Taxonomy Recognition:** Built the founding image engine powering Attribute Extraction, Similarity Learning, Brand Logo identification, Watermark and Fraud identification across multiple product categories. 80% pareto = 35 categories x 10m products per month (avg)
- Deployed and maintained the end-to-end CV-ML system with MLOps. **Project Impact:** 30% Reduction in cost = \$20M per year

Myntra Designs

Jul 2018 - Aug 2020

Bangalore, India

Data Scientist

- **Warehouse Optimization:** Solving the allocation of products to Myntra's principal warehouses, with dynamic capacities and regional demand. Used Mixed Integer Programming, and simple NNs for regression [arxiv]
- **Project Impact:** 27% Improvement in RU; 20% Improvement in two day delivery
- **GAN Experiments:** Text-to-image generation, mix-and-match interpolations, gradient based estimation of noise vectors in GANs.

PUBLICATIONS

- Intelligent Warehouse Allocator for Optimal Regional Utilization [arXiv]
- Let AI Clothe You: Diversified Fashion Generation [Springer]
- Evaluation of Loss Functions for Latent Vector Estimation from GANs [IEEE]
- Enhancing Symmetry in GAN-Generated Fashion Images [Springer]

BLOGS

Monte Carlo Tree Search for Code Generation using LLMs [link] [github]

Developing Advanced Reasoning and Planning Algorithms with LLMs [link] [github]

GPTX: Comparing multi-processing features of Rust and CPP using GPT-2 [link] [github]

Benchmarking rust-vs-cpp for graphics [link] [github]

SELECTED PROJECTS

lumos

<https://lumiralabs.github.io/lumos/>

OSS textbook parser with LLMs for sanitizing table of contents, extracting LLM digestible chunks, partitions of chapters

lumeon

<https://lumeon.app>

AI Learning Studio for Textbooks with lesson, quiz and flashcard generations. CMD-K for search + CMD-L for cursor style chat

SKILLS

Languages: Python, Rust, C++, JS, TS