SHREYAS SUNDARA RAMAN

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Computer Science (Artificial Intelligence & Robotics)

Goal: building intelligent autonomous agents that can extract task-relevant information from unstructured observations for long-horizon compositional reasoning

EDUCATION

Brown University, MSc. Computer Science, Rhode Island, U.S.A *September 2024 - May 2025*

Brown University, ScB. Computer Science, Rhode Island, U.S.A *September 2019 - December 2023*
Magna Cum Laude, Senior Prize & Honors, GPA: 4.0/4.0

Artificial Intelligence & Robotics

CSCI1470 : Deep Learning
CSCI1420 : Machine Learning
CSCI1951A : Data Science
CSCI1430: Computer Vision
CSCI2951F: Learning & Sequential Decision Making [grad level]
CSCI1460: Computational Linguistics
CSCI2951X: Reintegrating AI [grad level]
CSCI1951R: Introduction to Robotics
CSCI1970: Independent Study [Prof. Stefanie Tellex]
CSCI1970: Independent Study [Prof. George Konidaris]
CSCI 2952X: Research Topics in Self-Supervised Learning
CSCI2952N: Topics in Advanced Deep Learning
CSCI2951K: Topics in Collaborative Robotics
CSCI2952W: Critical Data in Machine Learning

Computer Science

CSCI0150 : Introduction to Object-Oriented Programming
CSCI0160 : Introduction to Algorithms & Data Structures
CSCI1870 : Cybersecurity & Ethics
CSCI0330 : Introduction to Computer Systems
CSCI0220 : Introduction to Discrete Structures & Probability
CSCI1805: Computers, Privacy & Freedom
CSCI1600: Real-time & Embedded Software
CSCI 1951L Blockchains & Cryptocurrencies

Engineering & Mathematics

ENGN0030 : Introduction to Engineering
ENGN0040 : Dynamics & Vibrations
MATH0200 : Multivariable Calculus
MATH0520 : Linear Algebra
APMA0350 : Applied Ordinary Differential Equations
APMA1650 : Statistical Inference I

Dubai International Academy, Dubai, U.A.E. *September 2009 - May 2019*
International Baccalaureate Diploma Program, IB Exam: 44/45
HL*:* Mathematics, Physics, Chemistry; SL: English, Spanish B, Geography; Extended Essay in Physics

Academic Accomplishments

Valedictorian, Class of 2019: IB DP Examinations (44/45 across 6 subjects) *June 2019*
Academic Achiever of the Year, 11th Grade *June 2018*
Valedictorian, Class of 2017: IB MYP Examinations (56/56 across 8 subjects) *June 2017*

Additional Academic Background

ACT with writing (34/36) *July 2018*
Subject SATs: Math II SAT (800/800) | Physics SAT (800/800) *August 2018*
Breakthrough Junior Challenge *(Khan Academy):* Top 10% among 3000+ entries, 131 countries *August 2016*

PUBLICATIONS

Skill Wrapper: Skill Abstraction Using Foundation Models *Fall 2024*
Co-First Author | LEAP @ CoRL 2024; prepared for RSS 2025 | *Python: GPT-4, Claude, AI2Thor, Robotics, ROS*

You Knew What I Meant: Improving HRC of Hierarchical Planning through LLMs *Spring 2024*
Co-Author | ASPIRE HFES 2024 | *Python: PyTorch, GPT-4, VirtualHome, SayCan*

LaNMP Benchmark: A Multifaceted Mobile Manipulation Benchmark for Robots *Spring 2024*
Co-Author | Robot Task Specification @ RSS 2024; LangRob @ CoRL 2024 | *Python: PyTorch, RT1, Spot Robot, AI2Thor*

CAPE: Corrective Actions from Precondition Errors using Large Language Models *Fall 2023*
First Author | LangRob @ CoRL 2023; ICRA 2024 | *Python: PyTorch, GPT-3, VirtualHome, Spot Robot*

Plugging in The Safety Chip: Enforcing Constraints for LLM-driven Robot Agents *Fall 2023*
Co-Author | LangRob @ CoRL 2023; ICRA 2024 | *Python: PyTorch, OpenAI GPT-3, Virtual Home, Spot Robot*

Tiered Reward Functions: Specifying and Fast Learning of Desired Behavior *Summer 2023*
Co-Author | RLC 2024 | *Python: OpenAI Gym, PPO, Gym-MiniGrid*

Planning Using Large Language Models via Corrective Re-Prompting *Spring 2023*
First Author | FMDM @ NeurIPS | *Python: PyTorch, OpenAI GPT-3, VirtualHome*

Categorizing the Visual Environment and Analyzing the Visual Attention of Dogs *Fall 2022*
Co-Author | Karen T. Romer UTRA Recipient | CV4Smalls @ WACV 2024; under-review in CogSci Journal | *Python: Tensorflow, CV2, matterport*

Development of a CNN for GPD Classification in Cardiac Arrest Patients *Summer 2022*
Acknowledgement | Brown University Archives | *Python: PyTorch, 1D CNN, Signal Processing*

PUBLICATIONS IN PREPARATION

Learning Factored & Disentangled Representations for RL using Self-Supervised Learning *Fall 2024*
Co-Author | prepared for ICML 2025 | *Python: PyTorch, MiniGrid, stable-baselines, stable-ssl, DreamerV2*

Visual-language embeddings with improved latent semantics for image editing *Summer 2023*
Co-Author | with Prof. Boris Katz & PhD David Mayo | *Python: PyTorch, Stable Diffusion v1.5, CLIP*

WORK & RESEARCH EXPERIENCE

Reviewer, LEAP @ CoRL 2024 *Fall 2024*

Business Analyst Intern, McKinsey & Co. (Dubai) *January 2024 - March 2024*

- Defined an AI vision, strategy and an operating model (supported by best-practices) for the B2B division of a large Telco in the MENA region
- Quantified the impact from exploring different whitespaces for AI infusion

Reviewer, ICRA 2024 *Fall 2023*

Head Teaching Assistant, Artificial Intelligence, CS1410 *Fall 2022*

- Designed course assignments with Prof. George Konidaris. Managed 120+ students & 20+ TA staff
- Built automated systems for assignment grading and staff-student email coordination
- Mentored 10+ students with their final projects (adversarial zero-sum game)

ML Engineer Intern, Wisdomise (www.wisdomise.io) *Summer 2022*

Python: GraphQL, scikitlearn, web3.py, TheGraph Protocol

- Optimized client's liquidity provisioning on UniswapV3 using machine learning
- Applied regression models for high/low tick prediction to maximize active time and fees earned. Achieved > 95% accuracy and > 98% utility with MSE ~10^{-4}
- Scraped UniswapV3 data (80 features on BTC/WETH pool) using the graph protocol from smart contracts

Blockchain Developer, Rario (www.rario.com) *Summer 2022*

Solidity: Smart Contracts, HTML/CSS, Javascript, Hardhat

- Worked directly with the CTO of a fast scaling venture (US$120M series A)
- Developed a (web-3) messaging platform to support P2P NFT exchanges; deployed on Polygon (Mumbai) for transparency
- Zero-knowledge to deployment for fully functional smart contracts to log messaging backend

Teaching Assistant, Graduate-level Data Science Course, DATA1030 *Fall 2021*

- Held weekly TA hours for 50+ students and graded assignments
- Mentored 14 grad students pursuing a diverse range of Machine Learning (ML) focused final projects

Research Intern, Serre Labs: Paleobotany AI Project *Fall 2020*

Python: Selenium, sqlite3, Pandas, Tensorflow, Cycle-GAN

- Contributed to taxonomic classification datasets and synthetic data generation on the project
- Expanded PaleoAI datasets 8× by adding 300,000+ images of mounted leaf specimens, with unique taxonomic identification; data improved model accuracy to >80%
- Worked with PhD students to enhance Cycle-GAN for domain transfer between leaf-fossil images; used to generate synthetic training samples in the fossil domain

Yahsat Space Lab: Research Intern *June 2017 - March 2019*

- Explored satellite design, energy-budget calculations and orbit efficiencies of CubeSats
- Only high school student to be accepted into a selective program for graduate students
- Supported professor with learning resources/models for incoming students

PROFICIENCY & PROJECTS

Hardware & Robotics: *Moderately Proficient* | python, C++, spot-sdk, ROS, ClipSeg

- Drone using RaspberryPi and ROS with: PID controller for autonomous altitude stabilization, optical flow, visual SLAM localization using Unscented Kalman-Filters
- Numeric "key-pad lock" with an Arduino UNO supporting passcode resets, 3 max passcode tries, watchdog timer for idle auto-locking, variable passcode lengths and visual audio feedback signals
- Integrated ClipSeg with a Spot robot for grasping arbitrary objects in an observed scene specified in natural language with modifiers e.g. "the large green cup", "something healthy to eat"

Python: *Highly Proficient* | sqlite3, Pandas, matplotlib, sklearn, Kivy, pytorch, tensorflow, functional programming

- Faster-RCNN for traffic sign detection; Pose-Estimation models for American Sign Language; LSTM/GRU for (french-english) translation; semantic parsing natural language to SQL; DQN on CartPole
- Regression and hypothesis testing correlating AirBnB and local housing prices in NYC

Java: *Proficient* | multi-threading, JavaFX (applets and AWT)

- Implementing classic games e.g. Tetris, Doodle Jump, Fruit Ninja; Genetic algorithm to learn Flappy Bird
- Visualizing graph and decision-tree algorithms [Dijgstka, Prim-Jarnik, PageRank] and SeamCarve

C: *Moderately Proficient* | multithreading, signals, signal safety, I/O registers [stdin, stdout], read-write locks

- Bash Unix shell that parses/executes commands [pwd, ls, chdir etc.] with appropriate error-handling
- Database operated using Malloc: allowing concurrent clients to safely add, query, sort, remove and print (using server socket model); done with signal handling and read-write locks

HTML, CSS & Python-Django: *Highly Proficient* **|** CSS stylesheet; slider, gallery, image effects

- Back-end web server and storage: SQL database connection (with Django) and standard queries (editing, conditionals, join-operation) for SQL data display in HTML, loading and saving files with Django

Javascript: *Moderately Proficient* | d3 + SVG elements: transformation, tool tips; importing csv data

- Building a stylistic data dashboard (using summary tooltips) behind an HTML page with interactive text/button inputs to filter pie-charts and perform scatter point regression in real-time [with animation]

MATLAB & SolidWorks: *Proficient* **|** systems of equations, graphical outputs, image imports, 3D printing

- Kinematically accurate predator-prey simulation; COVID-19 SIR model simulation
- Designed 3D printed components for bridge/truss structures and a bottle-opener

Solidity & Smart Contracts: *Proficient* | contract creation and deployment, keccack256, integration with hardhat

AWARDS & INTERESTS

Meiklejohn Mentor	Selected as peer counselor to advise incoming freshmen (Class of 2024)
Brown Space Engineering	Avionics and manufacturing divisions. Learned to use circuitry softwares (EAGLE) and develop logic gate design for satellite payloads
Chess	Founder of high school chess club; Coached 25+ members to win 3 consecutive inter-schools; 2nd place in Ivy League Fall 2022
STEMS Tutoring Program	Tutored physics and SAT preparation at Hope High School (Providence) weekly
Math Acceleration Group	Initiated a program to mentor 20+ juniors to meet their HL Math aspirations
Poetry	Published 25 poem anthology influenced by events impacting my childhood
Duke of Edinburgh Award	DoE Silver Award
Founder, Inspire Science	Founded an active STEM club in highschool with publications and events promoting scientific thinking
Languages	English (native), Spanish (professional working), Hindi (limited working), Tamil (native), Arabic (limited working), French (basic), Japanese (basic)