Shreyas Sundara Raman

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| Website | Linked In | Twitter | Google Scholar | GitHub |

Computer Science (Artificial Intelligence & Robotics)

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

EDUCATION

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

GPA: 4.0 / 4.0 | Advisors: Prof. Stefanie Tellex, Prof. George Konidaris
Selected Courses: Research Topics in Self-Supervised Learning

Brown University, ScB. Computer Science (Honors), Rhode Island, U.S. *Sep 2019 - Dec 2023*
GPA: 4.0/4.0 | Advisors: Prof. Stefanie Tellex | Selected Courses: Advanced Topics in Deep Learning, Learning & Sequential Decision Making, Machine Learning

Magna Cum Laude: top 10% in academic performance
Senior Prize: a top student who also gave back through teaching and research

Dubai International Academy, Dubai, U.A.E. *Sep 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)
Academic Achiever of the Year, 11th Grade
Valedictorian, Class of 2017: IB MYP Examinations (56/56 across 8 subjects)

Additional Academic Background

ACT with writing (34/36) *July 2018*
Subject SATs: Math II SAT (800/800) | Physics SAT (800/800) *Aug 2018*

SELECTED PUBLICATIONS

Skill Wrapper: Skill Abstraction Using Foundation Models. **S. S. Raman**[*], Z. Yang[*], B. Hedegaard, S. Tellex, D. Paulius, N. Shah
LEAP @ CoRL 2024; prepared for RSS 2025 | *GPT-4, Claude, AI2Thor, Robotics, ROS*

LaNMP Benchmark: A Multifaceted Mobile Manipulation Benchmark for Robots. A. Jaafar, **S. S. Raman,** Y. Wei, S. Juliani, A. Wernerfelt, I. Idrees, J. X. Liu, S. Tellex
Robot Task Specification @ RSS 2024; DGR @ RSS 2024 | *PyTorch, RT1, Spot Robot, AI2Thor*

CAPE: Corrective Actions from Precondition Errors using Large Language Models. **S. S. Raman**, V. Cohen, I. Idrees, E. Rosen, R. Mooney, S. Tellex, D. Paulius,
FMDM @ NeurIPS 2022; LangRob @ CoRL 2023; ICRA 2024 | *PyTorch, GPT-3, VirtualHome, Spot Robot*

Plugging in The Safety Chip: Enforcing Constraints for LLM-driven Robot Agents. Z. Yang, **S. S. Raman**, A. Shah, S. Tellex
LangRob @ CoRL 2023; ICRA 2024 | *Python: PyTorch, OpenAI GPT-3, Virtual Home, Spot Robot*

Tiered Reward Functions: Specifying and Fast Learning of Desired Behavior. Z. Zhou, **S. S. Raman**, H. Sowerby, M. L. Littman
RLC 2024 | *OpenAI Gym, PPO, Gym-MiniGrid*

Categorizing the Visual Environment and Analyzing the Visual Attention of Dogs. M. H. Pelgrim, **S. S. Raman**, D. Buchsbaum, T. Serre
Karen T. Romer Award | CV4Smalls @ WACV 2024; in-review CogSci Journal | *Tensorflow, CV2, matterport*

PUBLICATIONS IN PREPARATION

Learning Factored & Disentangled Representations for RL using Self-Supervised Learning. **S. S. Raman**, Y. Wei, V. Sharma, J. Lin. C. Hsu
prepared for ICML 2025 | *PyTorch, MiniGrid, stable-baselines, stable-ssl, DreamerV2*

Visual-language embeddings with improved latent semantics for image editing. D. Mayo, **S. S. Raman**, B. Chen, A. Babu, B. Katz
with Prof. Boris Katz & PhD David Mayo | *PyTorch, Stable Diffusion v1.5, CLIP*

[* indicates equal contribution]

WORK, RESEARCH & TEACHING EXPERIENCE

Robotics & AI Researcher – Humans 2 Robots Lab — Providence, RI, USA | *June 2024 - Aug 2024*
- Worked on a novel multimodal robotics benchmark and a self-supervised approach to predicate learning

Business Analyst Intern – McKinsey & Co. — Dubai, UAE | *Jan 2024 - Mar 2024*
- Developed an AI vision, rollout strategy and operating model for the largest B2B Telco in MENA. Forecasted value proposition for different AI whitespaces. Mentors: Gautam Shah, Zaid Gazalleh

ML Engineer Intern – Wisdomise (www.wisdomise.io) — Dubai, UAE | *Summer 2022*
Python: GraphQL, scikitlearn, web3.py, TheGraph Protocol, Uniswap V3
- Developed models to predict tick-range in BTC/WETH pools and optimize active time / fees earned for liquidity providers. Achieved > 95% accuracy, 98% utility and MSE ~10^{-4}. Mentors: Erfan Varedi, Fardad Zand

Blockchain Developer – Rario (www.rario.com | $120M series A) — Gurgaon, India | *Summer 2022*
Solidity: Smart Contracts, HTML/CSS, Javascript, Hardhat
- Worked with the CTO to develop a decentralized messaging platform to support P2P NFT exchanges. Progressed from foundations to deploying a full system on Polygon (Mumbai). Mentors: Ankit Wadhwa

Research Intern – Serre Labs: Paleobotany AI Project — Providence, RI, USA | *Fall 2020*
Python: Selenium, sqlite3, Pandas, Tensorflow, Cycle-GAN
- Expanded a dataset of mounted leaf species by 8× (300,000+ images) alongside automated taxonomic filtering. Worked with PhD student on domain transfer between leaf-fossils for synthetic data generation. Data improved classification accuracy to >80%. Mentor: Thomas Serre

Research Intern – Yahsat Space Lab — Dubai, UAE | *June 2017 - Mar 2019*
- Only highschool student hired. Learned satellite design, energy-budget calculations and orbit efficiencies of CubeSats whilst developing learning resources for future incoming students

Head Teaching Assistant – Artificial Intelligence, CS1410 — Providence, RI, USA | *Fall 2022*
- Led development of a new final project (adversarial zero-sum game) and built automated email systems. Managed 120+ students, 20+ TA staff and mentored 10+ students with projects. Mentor: Prof. Konidaris

Teaching Assistant – Graduate Data Science Course, DATA1030 — Providence, RI, USA | *Fall 2021*
- Mentored 14 grad students with final projects. Held TA hours for 50+ students. Mentor: Prof. Andras Zsom

Reviewer – LEAP @ CoRL 2024 — *Fall 2024*
Reviewer – ICRA 2024 — *Fall 2023*

PROFICIENCY & PROJECTS

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]

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"

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 a highschool STEM club with publications/events promoting scientific thinking
Languages	English (native), Spanish (professional working), Hindi (limited working), Tamil (native), Arabic (limited working), French (basic), Japanese (basic)
Breakthrough Junior Challenge	Submitted an educational video to Khan Academy's 2016 challenge that achieved top 10% among 3000+ entries in 131 countries