SHREYAS SUNDARA RAMAN

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COMPUTER SCIENCE (ML & Data Science Specialization)

Seeking to solve unexplored problems using computer vision, machine-learning (neural network) and data-science

EDUCATION

Brown University, Rhode Island, U.S.A — *September 2019 - May 2023*
ScB. Computer Science; Junior
GPA: 4.0/4.0

Computer Science Courses	*My Average* | *Class Average*	*Letter Grade*
CSCI0150 : Introduction to Object-Oriented Programming	94.8% | N/A	A
CSCI0160 : Introduction to Algorithms & Data Structures	94.2% | N/A	A
CSCI1870 : Cybersecurity & Ethics	|	A
CSCI0330 : Introduction to Computer Systems	95.5% | -	A
CSCI1470 : Deep Learning	99.6% | N/A	A
CSCI1420 : Machine Learning	99.1% | N/A	A
CSCI1951A : Data Science	96.6% | N/A	A
CSCI0220 : Introduction to Discrete Structures & Probability	106.5%| N/A	A
CSCI1970 : Independent Study Project	N/A| N/A	A
CSCI1430: Computer Vision	ongoing	
CSCI2951F: Learning & Sequential Decision Making [grad level]	ongoing	
CSCI2951X: Reintegrating AI [grad level]	ongoing	

Engineering & Mathematics Courses	*My Average* | *Class Average*	*Letter Grade*
ENGN0030 : Introduction to Engineering	99.9% | 89.7%	S* [S/NC]
ENGN0040 : Dynamics & Vibrations	95.2% | 85.6%	A
MATH0200 : Multivariable Calculus	93.8% | 88.1%	A
MATH0520 : Linear Algebra	98.9% | N/A	A
APMA0350 : Applied Ordinary Differential Equations	97.7% | 93.3%	A
APMA1650 : Statistical Inference I	95.6% | N/A	A

Additional Courses	*My Average* | *Class Average*	*Letter Grade*
LITR0110B : Poetry I	-	S [S/NC]
EEPS0810 : Planetary Geology	94.5% | 82.2%	S* [S/NC]

Note: S* denotes a pass with distinction in S/NC (i.e. Satisfactory / No Credit) courses

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

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*
GATEWAY (gifted student program): Student of the Year	*June* 2016

Additional Academic Background

ACT with writing (44/46)	*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*

WORK & RESEARCH EXPERIENCE

Teaching Assistant: Graduate-level Data Science Course, DATA1030 — *Fall 2021*
Supporting 50+ students via virtual TA hours | Grading

- Selected as “Teaching Assistant” for a graduate-level course within Brown University’s Data Science Initiative.
- Mentoring 12 grad students on Machine Learning (ML) final projects

UTRA Award Recipient *Summer 2021*
Panoptic Object Segmentation in Videos | Tracking Eye Fixations

- Led the Computer Vision branch of the project with the objective to track dog eye-fixations and correlate visual behavioral patterns of dogs *(Python: Tensorflow; CV2; matterport)*
- Sourced data sets of 35k+ images spanning 250k+ instances across 48 different classes and created a custom Mask-RCNN pipeline for transfer learning (across multiple GPUs) and label prediction

Serre Labs: Research Intern *Fall 2020*
Image Classification & Generative Modelling | Paleobotany (Family Identification) AI

- Expanded existing leaf datasets 8× by adding 300,000+ new images mainly of mounted leaf specimens, with unique ids and taxonomical details. New data improved model classification accuracy to >80%
- Web-scraping Tool | *Python (Selenium; requests)*: scrapes online databases for specific image file-links; automatically saves images using a user-specified or auto-generated file structure
- Metadata Extractor | *Python (sqlite3, Pandas and OS)*: extracts features (e.g. family genus species names) from different data set formats and auto-generates unique database-ids to store in an SQLite database; also flags for duplicates
- Taxonomic Lookup Table | *Python (SQLite and Selenium)*: scraped all 300,000 plant species into an alphabetized SQLite database; used as a reference tool to find associated family names given a ‘species or genus only’ image dataset
- Cycle-GAN Model | *Python (Tensorflow):* worked with grad students to enhance a Cycle-GAN model for translations between leaf and fossil images; used to generate training examples in the fossil domain

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

The only high school student accepted into a highly selective program for graduate students; explored satellite design, energy-budget calculations and orbit efficiencies of CubeSats. Supported the Professor in developing models/resources for incoming students

McKinsey & Company, Dubai, U.A.E: Job Shadowing *May 2017*

Job Shadowing a Research Analyst. Worked on short research pieces: country trade-profiles, efficiency of car rentals

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PROFICIENCY & PROJECTS

Java: *Highly Proficient* | multi-threading, I/O streams, JavaFX (applets and AWT), dynamic/functional programming
- Coded classical games e.g. Tetris, Doodle Jump, Fruit Ninja; created a population-based neural network for Flappy Bird
- Graph and decision-tree algorithms [Dijgstka, Prim-Jarnik, PageRank] and SeamCarve implementation

Python: *Highly Proficient.* I/O streams, sqlite3, Pandas, matplotlib, sklearn, Kivy, pytorch, tensorflow, functional programming
- Multiple Deep Learning models: zebra-horse CycleGAN, Faster-RCNN for traffic sign detection, LSTM/GRU for (french-english) natural language translation, reinforcement agent learning with sklearn
- Regression and hypothesis testing (sklearn) correlating AirBnB and local housing prices in NYC

C: *Moderately Proficient* | multithreading, signals, signal safety, I/O registers [stdin, stdout], terminal interaction, read-write locks
- Shell: a Bash Unix shell that parses input commands [pwd, ls, chdir etc.] and executes with appropriate error-handling
- Maze Solver: program to generate a valid random maze [2D with viable start and end] and solve the maze via DFS
- Malloc + Database: interactive program allowing clients to add, query, sort, remove and print a database (handled/hosted by a server socket) using multi-threaded processes; implemented with signal handling, thread safety and read-write locks

HTML, CSS & Python-Django: *Highly Proficient* **|** CSS classes and stylesheet; design elements e.g. slider, gallery, image effects
- Back-end web server and storage: SQL database connection (with Django) and standard queries (editing, conditionals, join-operation), structured SQL data display in HTML, loading and saving files with Django

React, Tailwind-CSS: *Beginner* | React 'Components', stylization using tailwind-CSS

- Built a cross-device responsive personal website with dynamic interactive features e.g. HTML animation, tagging schemas

SQL & SQLite: *Proficient* | SQL syntax, table JOINS and merges, searching, filtering and sorting

- Loading data onto and fetching data from SQL database; connecting and serving SQL data to an HTML webpage

Javascript: *Moderately Proficient* | interaction with CSS + HTML; d3 + SVG elements: style, design, transformation, tool tips; importing csv data; data web-display

- Data Dashboard: stylized graphs, pie-charts and scatter plots (with summary tooltips) hosted on a HTML page with interactive text/button inputs to filter displayed data or perform scatter point regression in real-time [with animation]

MATLAB + SolidWorks (CAD): *Proficient* | MATLAB: systems of equations, matrices, excel output, graphical outputs | SolidWorks: part development [sketches, image imports, extrusion, fillets, style/design], part assembly and engineering-drawings

- Intelligent kinematically accurate predator-prey simulation; COVID-19 infection spread (SIR model) simulation
- Generated 3D printed models of designs; constructed bridge/truss structures and a bottle-opener design

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INTERESTS & VOLUNTEERING

Meiklejohn Mentor	Selected to be a peer advisor and mentor to an amazing group of incoming freshmen (Class of 2024) advising on course choices, industry and research etc.
Brown Space Engineering	Member of BSE avionics and manufacturing divisions. Learned to use circuitry softwares (EAGLE) and explored introductions to Boolean Logic and Logic Gates
Chess	Founder and captain of high school chess club; Coached 25+ members and lead team to win 3 consecutive inter-schools; FIDE World Chess Federation member; 2nd place in Ivy League Spring Tournament at Brown
STEMS Tutoring Program	Tutored students at a public high school (Hope High School, Providence, RI) once a week; Taught high school physics and SAT preparation to students after-school hours
Math Acceleration Group	Initiated a mentorship program for high-potential juniors to help meet their HL aspirations. Many of the 20+ students have now been able to meet their goal.
Poetry	Writer. Wrote and published a collection of 25 poems - influenced by global events that impacted my childhood and youth
Senior Student Council	Outstanding Contribution Award for service to high-school community; Elected from sixth-grade for five consecutive years; managed about 10 initiatives
Duke of Edinburgh Award	DoE Silver Award
Founder, Inspire Science	Founded and ran a science website and blog (https://inspirescienceclub.com/) during senior school; with extensive followership and active publications on science in real life
Languages	English (native fluency), Spanish (medium fluency), Tamil (mother tongue)