SIDDHARTH SHRIDHAR DIWAN

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Education

Brown University | Sc.B. in Computer Science, A.B. in Astronomy | GPA: 4.0/4.0 Graduating May 2024

◇ **Relevant Coursework:** Software Engineering, Computer Systems, Deep Learning, Honors Linear Algebra, Discrete Structures and Probability, Intermediate Calculus, Statistical Inference

Experience

Computer Vision Researcher | Interactive 3D Vision Computing and Learning Lab Jun 2021 - Present

◇ Analyzed varying **image flow** implementations of the **Motion Grouping RAFT** algorithm to develop an optimal **Self-Supervised Segmentation** model that disambiguates left and right hands within **procedural frames** of culinary videos

Physics Researcher, App Developer |Schwarzschild Ray Tracing *[google-play/schwarzschild-ray-tracing]* Dec 2020 - Present

◇ Performed Schwarzschild Ray Tracing using the **Python differential equation solver library** and **elliptic integral library**

◇ Hosted an **API** using **Django** that plots a **dynamic recursive sampling** of ray trajectory points based on user inputs

◇ Developed a **React Native** application (in open testing on the **Play Store**) that allows users to trace rays in **2D/3D space**

Pyret Developer | Brown University Programming Languages Team Nov 2020 – July 2021

◇ Implemented the **Pyret Date-Time Library** by introducing **new datatypes** such as Duration, ZoneOffset, ZoneId, UTCDateTime and OffsetDateTime to support the representation and manipulation of durations and calendar-times

Data Science Intern | Indian School of Business | Hyderabad, India Oct 2020 – March 2021

◇ Designed and built an **interactive dashboard** with **Plotly**, **Dash** and **Heroku** to visualize trends in privacy labelled tweets

◇ Utilized techniques such as **web-scraping**, **multiprocessing**, **task scheduling** and **named entity recognition** to classify tweets based on sentiment, retweets, favorites, hashtags, and organization references

Projects

Text Simplifier *[sidwan02/text-simplifier]* Fall 2021

◇ Constructed a **Multi-headed Transformer** with **Tensorflow** and **Keras** that reduces the lexical complexity of sentences

◇ Wrapped the architecture in a **Flask API** and linked it to a **Heroku** hosted **React** app that takes English sentences

◇ Built custom weighted accuracy and **perplexity per symbol metrics** and a custom loss function to **hyperparam-tune** the model via **Tensorboard**, achieving 81% test accuracy and 2.8 test perplexity over 10 epochs of training

Radio Streaming App *[full-stack-at-brown/project-bsr-app]* Jan 2020 - Nov 2021

◇ Developed a radio content streaming application in **React Native** for the Brown Student Radio

◇ Built the application's **data fetching** and **streaming** functionality while preserving **track state**

Journal Texter *[sidwan02/journal-texter]* Spring 2021

◇ Built a **web-app** with **Maven**, **SQL** and **Heroku** to record and organize user journal entries

◇ Developed a **word count vectorization** algorithm in **Java** to extract terms from entries and built a **sentiment analysis** model using **PyTorch** to attach **contextual sentiment** to the terms for **recommending** successive entry topics

Leadership

Flight Software Co-Lead | Brown Space Engineering Winter 2021 - Present

◇ Leading the flight software subgroup of **30+ members** in developing **FreeRTOS modules** for the PVDX **cube satellite** approved for launch in 2024 by **NASA**

◇ Authoring collateral and delivering lectures on the EQUiSat cube satellite's **embedded C** multi-threaded **Camera Driver** and **UFH Radio Transmitter** modules

Undergraduate Teaching Assistant | Software Engineering CSCI 320 Fall 2021, Spring 2022

◇ Developed **Dijkstra**, **A*** and **LPA*** lecture content and **Java** assignments and hosted weekly TA hours for **60+ students**

◇ Built traffic and street intersection servers in **Python** to provide students with **real-time data** for their pathfinding projects

Skills

◇ Languages & Technologies: Python, Java, React Native, JavaScript, PyTorch, TensorFlow, C, Go, SQL, x86-64, Racket

◇ Interests: Public Speaking, Debate, Rocketry, Badminton, Synthwave, Chiptune, Drum and Bass