Biographical Information

Please provide information regarding relevant work experience or training (summer jobs, research assistantships, computer use or programming, specific instrumentation experience, etc.). For computer experience, including specific details such as platform type (e.g., Mac, Windows, UNIX), programming languages used (e.g., FORTRAN, MATLAB, IDL, Python, JMARS), and level of experience (e.g., beginner, intermediate, proficient)

Languages – Python (intermediate), C (intermediate), JavaScript (beginner).

Tools and Frameworks – Git (Proficient), Flask (intermediate), React (intermediate), Open-CV (intermediate), Selenium (intermediate), GIS (beginner), ROS (beginner), TensorFlow (beginner)

Platform experience – Windows (Proficient), Linux – Ubuntu, and Pop-OS (Proficient) – I use these platforms almost regularly.

Being a computer science student, I am good with programming and problem solving, having been honing these skills throughout my university life and through other means like open-source contributing (have completed hacktoberfest-2022) and hackathons (attended 6+ in the past 8 months).

Documentation and code for most of my experimentations can be found in my GitHub profile: https://github.com/Nandan-N

Work experience –

Web developer

February 2022 - present

Deployed a website from scratch using HTML and CSS for Shunya, the college math club as well as actively maintaining and developing it.

Link – https://shunyapes.com/

Research experience –

Internet of Things laboratory

November 2022 - present

Identifying Errors in written Kannada language text using Weak Supervision

This is an ongoing machine learning project aimed to build error detection and work as a writing tool and aid in the writing of local indigenous spoken language as it navigates real word data, noise, and mislabelling.

Sentinel Drone navigation

June 2022 – present

Worked on developing and building an improved way of using geographical data for optimal self-route finding navigation system for a smart sentinel drone using Geographic Information System software QGIS and python. Additionally, dealing with building computer vision for it using Open-CV.

Working with E-yantra program, IIT Bombay, and Robotics Automation Lab, Pes University.

Lab Assistant, Chemistry Lab

December 2021 – March 2022

Assisted the professor with research and experiments. Successfully assisted with zero safety incidents.

Learned about research methodologies, and scientific writing using LaTeX as well as the skills to use software like chem sketch and scikit.

A few of my computer science projects so far include –

8 Bit Computer

Implemented an 8-bit General Purpose Computer on an FPGA board having load-store architecture using Verilog

- Built a memory module and an ALU with CLA adder and Booth

- Implemented Recursive function calls and the General-Purpose Computer could run programs and display results

- Implemented an Interpreted and Compiler for the programs to be run on this General-Purpose Computer

Help website built for a social NGO.

- Implemented using HTML, CSS, and Firebase.

Built a website for the Mumbai-based "Hands of Hope", an NGO foundation dedicated to fighting against sexual abuse by creating awareness and educating. This website was selected as one of the top 3 projects in "Haul it away", an annual college hackathon.

Git System.

- Implemented using Python

Built a personal git system for version control using python that can do various standard functions like create a repository, commit, and push itself to GitHub.

I also have other side projects like a BitTorrent client, a web server using node, Python graph visualizer, and a bunch of frontend websites among numerous others, most of whose code is in the GitHub link above.

Few of the relevant courses I undertook at university include:

Engineering Chemistry; Engineering Physics; Python for Computational Problem Solving; Problem Solving with C; Engineering Mathematics; Digital Design and Computer Organisation; Data Structures; Statistics for Data Science; Web Technologies; Automata, Formal Languages, and Logic; Operating Systems; Design of Algorithms; Computer Networks; Micro Architecture.

Additionally, I have also undertaken and completed the following online certification courses:

• Supervised Machine Learning: Regression and Classification - From Andrew Ng, Coursera

Studied the classification, regression, and gradient descent of models

• Unsupervised Learning, Recommenders, Reinforcement Learning - From Andrew Ng, Coursera

Studied clustering and anomaly detection and built a recommender system

• Advanced Learning Algorithms - From Andrew Ng, Coursera

Studied TensorFlow, decision trees

• Complete Web Development Bootcamp - From Angela Yu, Udemy

Studied MERN stack, HTML, CSS, and various other frameworks

• Integrated Robotics and Applied Computer Vision - From PesU IO

Learned about ROS, Robotics, and Computer Vision; Did various projects on turtlesim publisher and gazebo.

Please provide a brief biographical sketch

Nandan was born in Bangalore where he eventually grew up. He got interested in astronomy after a childhood trip to the local planetarium, where his mind was blown away by seeing the sky theatre there. He returned as a volunteer throughout his high school, being present there for nearly every single eclipse and other rare Astro phenomena viewing parties, community outreach, science showcases, and educational programs. Usually being a science volunteer in most of these events, he has taught 100+ visiting school kids about introductory astronomy and various physics forces.

He has been the winner of various astronomy quizzes and contests across the city, district, and state levels. Thanks to them, he was one of the five selected, from a pool of thousand applicants, to represent his nation in the 24th APRSAF space conference's water rocket competition, which was hosted by JAXA, Japan, and ISRO, India. It was challenging as it required one to have an understanding of aerodynamics and fluid dynamics in freshmen university level depth, as well as mastering the craft of building strong water rocket models, with the ability to launch them to the prescribed target. He rose to the challenge and worked hard to meet the demands as he made the most of this opportunity to learn and interact while competing against students from 13 other Asian pacific nations.

When he's not writing about himself in the third person for this summer program, he is often found volunteering at university events or planetarium public outreach programs. He also enjoys learning new languages and he speaks over 6 fluently so far. He is the domain head of Equinox, the space club, and Linguista, the Language learning club of the university. He can be found holding workshops and events on these often on campus, helping others explore astronomy and languages.

Apart from these, he enjoys reading novels and writing at medium platforms and college newsletters, where he's one of the junior editors. He hopes to write a fun book on introductory astronomy one day, while also dreaming of becoming a researcher.

Please describe academic goals, career plans, and scientific interests (please be as descriptive and specific as possible)

My academic goals are to get a doctorate of philosophy in aerospace engineering while heavily contributing to research. Ten years from now, I wish to see myself having completed my doctorate and possessing reasonably in-depth knowledge of the aerospace field and in a continuous quest for mastery through constant learning.

My career plans are to be a researcher and work as a professor at a prestigious university while researching cutting-edge technology. I pursue this so because I believe this to be intellectually rewarding and is a great way to contribute meaningfully back to society.

Regarding scientific interests, I have long been interested in astronomy, linguistics, and computation. A few of my interests in Astronomy include planetary bodies, their geochemistry, interiors, and surface; Moon exploration and its craters; Search for Extra-terrestrial life. In computers, my interests are in data analytics and natural language processing. I have long wondered and been fascinated by these above topics.

Please provide a summary of why you wish to participate in the internship program

I wish to pursue this internship to evaluate my inherent abilities and potential while developing and strengthening them further. I have a strong basic foundation of knowledge in astronomy and I believe that the best way to advance would be to gain actual research experience. Browsing through the past project section and reading the past papers by the previous interns, I couldn't help but feel a strong desire to work here. This internship program is a perfect opportunity to make the best use of summer while doing meaningful work which helps me get closer to my academic and career goals.

I'm mainly looking forward to gaining valuable research experience while developing new skills and refining others while meeting and working with new professionals and experts.