# S. Saketha Ramanujam S

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Portfolio | Github

## EDUCATION

**Arizona State University, Tempe, Arizona** — *Expected grad. 2022*
M.S.E in Electrical Engineering — *Cumulative GPA: NA*

**Gayatri Vidya Parishad College of Engineering, Vizag, India** — *2019*
B.Tech in Electronics and Communications Engineering — *Cumulative GPA: 7.92*

## EXPERIENCE

**Project Associate — Scientific and Industrial Research Center** — Dec '19 - Dec '20
*Technologies: Python, C, LabView, MATLAB, Eagle*

- Conducted research in **higher order moments for relating scattering characteristics of gaseous mixtures**.
- Developed and deployed, **signal conditioning, processing and machine learning** algorithms for Photonic System(s).
- Devised and conducted experiments for analysing structural health analysis of metallic structures with opto-electronic devices
- Built tooling for extracting, visualising and archiving Air Quality Index data-sets from the Central Pollution Control Board of India, website.

**Google Summer of Code Mentor — Beagleboard.org** — May '20 - Aug '20
*Technologies/Hardware: C, Linux, Pocketbeagle, BeagleBoneBlack*

- Co-mentored a project aimed at implementing a **bidirectional-bus** using pocket-beagle device to add additional I/O capabilities using P.R.U. based architecture.

**Software Development Engineering Intern — Rorodata** — June '19 - Dec '19
*Technologies: Python, Apache Airflow, Docker, Apache Bench, Nginx, GCP, GitHub Actions*

- Built and deployed a **automated test suite bot** using Pytest, Selenium and Nginx for availability and functionality test on data ingestion platform.
- Responsible for maintaining **CI/CD** pipelines using Google Cloud Build and GitHub Actions.
- Performed evaluation of **Apache Airflow** platform for use in Machine Learning workloads and developed test workflows.
- Aided in performance testing of APIs on Google Cloud Platform components such as App Engine, Compute Engine and Cloud Run using Apache-Bench and Locustio.
- Deployed a internal python package management server using **devpi**.
- Built web-scrapers and cli tools to obtain causal data from various platforms and deployed datasets using **Datasette**.

**Summer Research Intern — SIRC, GVPCE, Vizag** — Apr '18 - June '18
*Technologies/Hardware: Python, C, Raspberry-pi, Arduino, Web-Sockets, Firebase, GCP*

- Responsible for development of **wireless data transmission client using socket programming** to enable sensor data transfer.
- Custom **image upload and analysis engine** (using Google Firebase) for microbial monitoring in water samples.
- Aided in designing of a **trans-impedance amplifier circuit** for a photonic system.
- Designed a **band-pass filter** (using LabView, MATLAB) for noise cancellation in opto-electronically recorded audio.

## PROJECTS

**CPCB-CCR Client**
*Technologies: Python, Pandas*

- A Python library to import air quality monitoring data as recorded by Central Pollution Control Board's weather stations across various stations in India, into python environment as pandas data-frames using requests and a custom API wrapper around the original application.

**Spectrum Generator**
*Technologies/Hardware: Raspberry-Pi, Python, MATLAB*

- Developed a power spectrum generator and analysis program for comparison and detection mechanical damage and structural health monitoring of metallic structures using photonic sensors coupled with raspberry pi computer.

**Py-Ar MQxx**
*Technologies/Hardware: Python, C++, Arduino, MQ2, MQ5, MQ9, MQ135*

- Serial logger in python to extract **MQ2, MQ5, MQ9, MQ135** (gas sensors) data connected to an Arduino board, to monitor the presence of atmospheric pollutants such as Methane, Butane, LPG, Smoke when the device suite is placed in an area of interest.

**NAAS-Docker**
*Technologies: Python, Docker, Bash*

· Prototype, demonstrating the feasibility of deploying Jupyter Notebook as a service, using Docker containers, on Local Network with a central storage system.

**Gaze Point Heat map**
*Technologies: Python, Open-CV, Image Processing*

· Webcam enabled gaze point tracking and visualization tool developed using HAAR Cascades and Open-CV to analyse visual areas of concentration on a computer screen.

**Fortune Teller**
*Technologies: Shell, web-hooks, GitHub Actions*

· Random quote delivery system using web-hooks to a slack work-space using timed GitHub Actions.

## TALKS

**The State of Pollution Monitoring in India** Sept '20
*Location: Internal Talk, CATS Ecosystems, Nasik*

A talk on the state of pollution monitoring in India, concentrating the pitfalls of traditional methods of pollution monitoring and analysis of pollution monitoring data using data from Central Pollution Control Board of India.

**Web scraping in Python 101** Mar '20
*Location: Remote, TechX, GirlScript Mangalore*

Primer on how to view, extract and analyse data from the internet using the techniques of web-scraping using Beautiful soup in Python.

**Subtle Art of Backward Differencing** Aug '19
*Location: Devconf by RedHat, India*

A talk on using methods of **successive differences** in signal processing and machine learning and its implications on the performance of models.

## TECHNICAL STRENGTHS

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|---|---|
| **Languages** | C, JavaScript, MATLAB, Python |
| **Familiar with** | Java, Julia, Go |
| **Web Development Frameworks** | Flask, Jekyll |
| **Software & Tools** | Git, Shell, HFSS, OpenCV, Keras, Unity Engine |

## SELECTED COURSEWORK

**Electrical Engineering:** Electromagnetic Theory in Transmission Lines, Antenna Theory and Design, Microwave Engineering and Laboratory, HFSS Laboratory, Signals and Systems, Digital Signal Processing, Analog and Digital Electronic Circuits, Communication Systems

**Computer Science:** OS, Data Sturctures and Algorithms, Computer Organization, Computer and Data Communication Networks.

**Other Courses:** Random Variables and Numerical Methods, Linear Algebra, Calculus, Data Driven Astronomy

## VOLUNTEERING AND OUTREACH

National Service Scheme Volunteer, Gayatri Vidya Parishad ('16-'18').

GitHub Campus Expert ('18 - Present).

GitKraken Ambassador ('19 - Present).

Mentor for Machine Learning, Mathematics, GVP-AI Club ('18 - '19).

Mentor for Programming, Pocket Computers, Technical Club, Gayatri Vidya Parishad

## MISC

Co-ordinator, College Cultural Club, Gayatri Vidya Parishad.

Lead Pianist,Arranger, College Cultural Club.

Pianist, Unflugged Band.