# Sai Prasath Suresh

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## Education

**Github** **LinkedIn**

### Georgia Institute of Technology — **Atlanta, USA**

*MS in Computer Science - Machine Learning;* **GPA: 4.0** — August 2022 – May 2024

**Courses:** Machine Learning, Natural Language Processing, Web Search and Text Mining, Algorithms

### Indian Institute Of Technology(IIT) Bhubaneswar — **Bhubaneswar, India**

*B.Tech/M.Tech, Computer Science and Engineering;* **GPA: 9.79/10** — July 2017 – May 2022

**Courses:** Data Analytics, Operating Systems, Computer Networks, Database Management Systems

## Technical Proficiency

**Programming Language:** Python, C, C++, Java, SQL

**Libraries:** Tensorflow, Keras, PyTorch, Pandas, Numpy, Matplotlib, Scikit-Learn, NLTK, Open CV

## Work Experience

### Software Developer - Graduate Assistant, IPaT, GeorgiaTech — *Jan'23 - Present*

- Developing a **Emergency Management portal using Flask** for detecting flooding in Georgia counties.
- Designing pipelines for processing and storing data in GCP collected from sensors across the Georgia coast.
- Building a dashboard to visualize real-time data which will be used for emergency planning and response.

### Deep Learning Intern, Singapore University of Technology and Design — *Jan'22 - Apr'22*

- Developed a novel **semi-supervised GAN** model for detecting trojan DNNs created by service providers.
- Redesigned existing models to achieve attack-agnostic detection by integrating an **Denoising Autoencoder**.
- Achieved state-of-the-art performance **+3% AUC** on computer vision tasks while minimizing run-time by **15%**.

## Key Projects

### Multi-Modal Sarcasm Detection — *Aug'22 - Dec'22*

- Analysed clips from TV series to detect sarcasm using **VGG16 for images, Librosa for audio and BERT for text** processing. Worked with an imbalanced dataset with 95%-5% split.
- Examined various feature engineering techniques and analyzed the model's performance using **Explainable AI** tools like SHAP and PDP.

### Anomaly Detection using Multi-Variate Time Series Analysis — *Sep'21 - Dec'21*

- Implemented a **dual attention based LSTM/GRU** models to pre-emptively detect anomalies in a power plant.
- Minimized costs by reducing the false alarm rates to **0.21%** with a high detection accuracy of **97.8%**.

### Multi-Class Attack Classification using Reinforcement Learning — *Jan'21 - Apr'21*

- Designed a **Double Deep Q Network (DDQN)** which dynamically adapts to changes in data distribution using feedback from the user. Achieved **+6% accuracy** compared to existing benchmarks.
- Investigated the performance of the model on the network data from the cloud based ISOT-CID (8Tb) dataset.

### Compositional Epidemiological Modeling of Covid-19 — *Jul'20 - Sep'20*

- Generated optimal control strategies to control the spread of the virus by analysing the health vs economic impacts.
- Performed **multi-model comparisons** by implementing agent (Stochastic) and differential equation (Modified SEIR, CovidSim 2.0) based models using **hybrid timed automata**.

## Publications

**Analysis of Continual Learning Models for Intrusion Detection System** - IEEE Access [2022]
**Intelligent Intrusion Detection System for Smart Grid Application** - CyberSA [2021]