

# Sairam Tabibu

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## Summary of Qualifications

**Interests:** Computer Vision, Machine Learning, Deep Learning, Natural Language processing

**Software and Languages:** Python(proficient), C++(proficient), C(basic), R(basic), Matlab(proficient),  $\LaTeX$ (intermediate)

**Embedded Platforms:** Raspberry Pi, Arduino

**Packages and Framework:** Pytorch, Keras, Tensorflow, Numpy, Scikit-learn, OpenCV, MatConvnet

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## EDUCATION

**University of Washington, Seattle — UW College of Engineering, Seattle, WA**

*Master of Science in Electrical and Computer Engineering*

*Sept. 2019 – Mar. 2021 (expected)*

Selected coursework - Intro to Artificial Intelligence for mobile robots, Machine Vision, Advanced Intro to Machine Learning

**Indian Institute of Technology(BHU), Varanasi, Varanasi, India**

*GPA-3.5/4*

*Bachelors of Technology in Electronics Engineering*

*Jul. 2013 – May. 2017*

Coursework - Data structures and algorithms, Linear algebra

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## RELEVANT EXPERIENCE

**Research Fellow, IIT, Hyderabad India**

*Cancer detection and Survival Prediction using Deep learning*

*Nov. 2017 – Mar. 2019*

- Spearheaded and developed a fully automated model which detected kidney Cancer and it's sub-types from tissue slide images (**Gigapixel Images**) using **Deep Neural networks**. **Paper published in Nature Scientific reports.**
- Designed and Implemented a novel **Directed Acyclic graph based SVM model** to be used on top of Deep learning model to deal with **Class Imbalance** which increased the classification accuracy by **6-7%** (86% - 93%).
- Developed a survival prediction system using a **COX Regression model** trained on the features extracted from the Deep Net **without any pathologist supervision.**
- Skills - Deep Learning, Computer Vision, PyTorch, Python, Matlab, R

**Research Project, IIT, BHU, India**

*Lexical and visual analysis of social media posts*

*Jan. 2017 – Apr. 2017*

- Spearheaded the project on developing a system to detect whether a social media post requires empathetic response.
- Designed and Implemented a pipeline to extract verbal and visual (**facial action units** for expression) and used **Logistic Regression and Random forest** for classification achieving **80% accuracy**. **Paper accepted in FLAIRS'17.**
- Skills - Computer Vision, Natural Language Processing, Python, Scikit

**Research Project, IIT, BHU, India**

*Multi-modal analysis for deception detection*

*Sep. 2016 – Dec. 2016*

- Developed a data-driven method for automatic deception detection in real-life trial data.
- Implemented an automated pipeline to extract the visual cues (face expressions, color attributes etc.), verbal cues (utterances etc.) & audio cues and did a **Decision level fusion using SVM model** on top of these modalities for classification.
- Achieved an accuracy of 78% surpassing the Human level accuracy(58-60 %) by **more than 15%**. **Paper accepted in ICDM workshop'16.**
- Skills - Computer Vision and Machine Learning, Natural Language Processing, Python, Scikit

**Research Intern, NTU, Singapore**

*Infrared Image processing and vessel detection in Maritime Environment*

*May. 2016 – Jul. 2016*

- Developed a **automated Ship tracking system using IR cameras** along the Singapore coastline with possible variations in orientation, shape, distance and surrounding effects.
  - Improved the ship detection system by implementing the **Selective search method** (Graph based object segmentation followed by grouping based on location, shape, color of the object to generate probable bounding boxes).
  - Implemented and trained **Deep Neural networks** on the IR images to extract relevant features and used SVM's for classification.
  - Skills - Computer Vision and Machine Learning, C++, Matlab
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## ADDITIONAL EXPERIENCE

**Deep Learning Certificate Program Mentor**

*Great Learning, Bangalore, India*

*Dec. 2018 – May. 2019*

- Mentored **30+ working professionals** by teaching them Computer Vision and Machine Learning concepts.
- Created and organised assignments covering projects of **Face and object detection** and graded them.

## Self Driving Mobile robot

*University of Washington, Seattle, USA*

*Sep. 2019 – Dec. 2019*

- Applied Model predictive path Integral Control, Model Predictive control and PID on a mobile robot.
- Implemented a Particle filter with a Sensor model which interfaced LIDAR to estimate robot's real time position.
- Color segmentation used for visual servoing and obstacle avoidance.

## Real time Face recognition based on Embedded Systems

*Changwon National University, South Korea*

*May. 2015 – Jul. 2015*

- Spearheaded the project on improving and deploying a Real time face recognition algorithm on Embedded systems such as Raspberry Pi to be deployed as a low cost product.
  - Designed a system which extracted **higher order Local derivative patterns** and used Histogram matching for recognition.
  - Implemented and improved the accuracy by using transforms such as **Adaptive Histogram equalisation** to bring illumination in-variance and increased the accuracy by **7-8%**.
  - Skills - Computer Vision, C++, OpenCV
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## PUBLICATIONS

**J01 Tabibu S**, Vinod PK and Jawahar CV "Pan-Renal Cell Carcinoma classification and survival prediction from histopathology images using deep learning." NPG Scientific Reports, 2019. ([url](#)) ([pdf](#))

**C01** Jaiswal, Mimansa, **Sairam Tabibu**, and Erik Cambria. "'Hang in There': Lexical and Visual Analysis to Identify Posts Warranting Empathetic Responses." in The Thirtieth International Flairs Conference - AAAI publications 2017. ([url](#)) ([pdf](#))

**C02** Jaiswal, Mimansa, **Sairam Tabibu**, and Rajiv Bajpai. "The Truth and Nothing But the Truth: Multimodal Analysis for Deception Detection." Data Mining Workshops (ICDMW), 2016 IEEE 16th International Conference on. IEEE, 2016. ([url](#)) ([pdf](#))

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