

# Sairam Tabibu

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## Summary of Qualifications

**Interests:** Computer Vision, Machine Learning, Deep Learning, Software Development

**Software and Languages:** Python(proficient), C++(proficient), C(basic), R(basic), Matlab(proficient), L<sup>A</sup>T<sub>E</sub>X(intermediate)

**Embedded Platforms:** Raspberry Pi, Arduino

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

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## EDUCATION

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

GPA-3.9/4

*Master of Science in Electrical and Computer Engineering*

Sept. 2019 – Jun. 2021 (expected)

Selected coursework - AI for mobile robots, Machine Vision, 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, Image processing

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## RELEVANT EXPERIENCE

**Genentech San Francisco, California, USA, Research Intern**

*Predicting Carcinoma stages in Lung Histology images*

June. 2020 – Dec. 2020

- Designed and implemented an end to end fully automated pipeline to determine Cancer stage and survivability from Lung Cancer Data Images.
- Implemented an **instance segmentation** pipeline to extract out accurate Nuclei boundaries.
- Experimented with multiple **Multiple Instance Learning** pipelines to distinguish between low and high stage and brought architectural changes in the Deep neural network improving the accuracy by **3 - 4%**. [Python, Matlab, R, Pytorch]

**IIIT, Hyderabad India, Research Fellow**

*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.
- 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**. [Python, Matlab, R, Pytorch, Keras]
- **Paper published in Nature Scientific reports.**(url) (pdf)

**Amazon, Capstone Project**

*Quick Draw - Shape detection using AWS Deeplens and Alexa Echo Device*

Jan. 2020 – Jun. 2020

- Developed and implemented a fully automated Quick draw game on AWS Deeplens and Echo.
- Implemented a fisheye correction algorithm to improve the wide angle image from Deeplens.
- Trained a Resnet50 on 40 object classes to achieve **94% accuracy** on object detection.
- Incorporated an Alexa Echo Device receiving data from AWS Kinesis giving out prediction results. [MXNet, Python]

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

*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**. [C++, Selenium, Scikit]
  - **Paper accepted in FLAIRS'17.**(url) (pdf)
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## ADDITIONAL EXPERIENCE

**Self Driving Mobile robot**

*University of Washintgon, 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. [Python, ROS]

**Multi-modal analysis for deception detection**

*IIT BHU, India*

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%**. [Python, Scikit]
  - **Paper accepted in ICDM workshop'16.**(url) (pdf)
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