Sailalitha Gollapudi

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EDUCATION

- **University of Pennsylvania** **GPA: 3.7/4**
  Masters in Artificial Intelligence & Robotics Aug'18-May2020(Expected)
  - Relevant Topics: Introduction to Robotics, Design of Mechatronics System, Machine Learning, Perception, Model Predictive Control, Control for Robotics, Robust controllers, Statistics and Probability, Deep Learning.
- **Anna University, Chennai** **GPA: 3.7/4**
  Bachelor's in Mechanical Engineering Aug'14 – May'18
  - Relevant Courses: Electronic Drives, Computer Aided Design, Engineering Design, Product Development, 3D printing

KEY SKILLS

Languages: Python, C, MATLAB, embedded C, Atmega Microprocessors, NodeMCUesp32,C++
Software/Libraries: SolidWorks, Simulink, Arduino, LATEX, ROS, TensorFlow, Pytorch, Keras, Git.

EXPERIENCE/INTERNSHIPS

ROBOTICS SOFTWARE INTERN **May'19-Aug'19**

NextStep Robotics, Baltimore

- Developed clinical metrics for patient improvement using data analytics. Integrated metrics on User interface and delivered for clinical use.
- Embed and test machine learning algorithm, both on bench and during walking. Integrating predictive capability on firmware level.
- Developed and implemented testing and validation scripts for testing protocols on the robot in accordance with FDA standards. Initiated and developed RDBMS platform, managed database access in relation to user requirements
- Skills: Python, Kivy, SciPy, SQLite, User Interface, Clinical Data Analysis, Git.

RESEARCH ASSISTANT **Apr'19 -Ongoing**

Penn Medicine- CardioVascular Lab

- Implementing Robot arm control for automating Echocardiogram using ROS and biomedical image analytics.
- Developing classification and segmentation algorithms to identify different views of the heart. Co-operating with Doctors to improvise the utility of the product.
- Initiating design choice for robot, implementing beta version of software. Core member of the product development team.
- Skills: AWS, Python , Keras, ROS , product development , Medical Imaging(image type – dicom)

PROJECTS/RESEARCH

MACHINE LEARNING:

LUNG CANCER SEGMENTATION AND DETECTION **Feb'19-Apr'19**

Project **University of Pennsylvania**

- Developed a classification algorithm for Lung Nodule Analysis. Data preprocessing and augmentation on 3d CT scans and implemented segmentation techniques for optimizing performance.
- Implementing Deep learning Networks- Squeeze Net, Mobile Net (depth wise spatial convolution) with traditional 2D convolutional network to compare the performance.
- Developed data pipeline for preprocessing and classification. Achieved 89% accuracy and analyzed sensitivity and specificity metrics.
- Skills: Python, TensorFlow, Keras, Data preprocessing., Deep Neural Networks, Medical Imaging (image type – mhd)

AUTONOMOUS BEACH CLEANING ROBOT **Jan'17-Apr '18**

SSN Innovation Centre

- Developed an autonomous robot that has decision making capabilities to identify litter and clean them using the lifting mechanism designed. Report. Hands-on prototyping and development of robotic system.
- Implemented video processing to identify litter in real-time object detection of litter. Implemented using machine learning algorithms in Python , Keras.Autonomous Robot-Video
- Skills: Python , Arduino , Video Processing , Product design.

ROBOT LOCALIZATION USING NEURAL NETWORKS

Jan'19-Feb'19

Course Projects **University of Pennsylvania**

- Implemented robot localization using INDECS dataset. Analyzed hyper-parameter tuning in Neural Networks to increase confidence in predictions.
- Worked on Breast Cancer detection, diabetes detection using classic machine learning algorithms. Implemented various methods of Gradient Descent , compared performance evaluation between AdaGrad , Stochastic and Adam. Achieved 98.126% accuracy on breast cancer dataset and was 73%.
- Skills : Python , SVM, Data Analytics , Stochastic Gradient Descent ,Keras, TensorFlow

ROBOTICS:

MOTION PLANNING

Nov'18 -Dec '18

STUDENT RESEARCHER **University of Pennsylvania**

- **Mobile Robot:** Comparison of Probabilistic path planning (RRT*) and Artificial Potential Field (Hybrid Automata) method on a differential drive robot. Evaluated algorithm performance on different environments. Motion-Planning Video , **Report**
- **Manipulators:** Performed Probabilistic Roadmap(PRM) and Artificial Potential field-based path planning on Lynx Manipulator real time. Performed velocity kinematics on manipulator arm. Manipulator-PathPlanning
  Skills: MATLAB, Motion Planning

IMPEDANCE CONTROLLER ON KUKA

Jan '19- Mar'19

STUDENT RESEARCHER **University of Pennsylvania**

- Designed an impedance controller on the KuKa robot using the system dynamics. Joint space to task space control conversion to implement null space control.
- Integration of the controller using ROS inbuilt packages for KuKa. Virtual trajectory will be generated and forces on the end effector will be evaluated.
- Skills: ROS , MATLAB , Manipulator kinematics , Control , Physics.

ADDITIONAL PROJECTS

- 6dof pose estimation using semantic key point detection using Deep neural networks.
- U-net segmentation for automatic background
- Retinopathy detection using Support Vector Machines and Adagrad.
- Pacman Reinforcement learning.
- Biomimetic Fish Design using Shape memory alloys. Publication
- Mobile Rehabilitation robot created for stroke patients developing MATLAB pipeline.