Shyam
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Education

- **Anna University** — Coimbatore, India
  Bachelor of Engineering in Computer Science Engineering; CGPA:(7.6/10.0) — *Aug. 2013 – Jul. 2017*

Experience

- **Healthcare Technology Innovation Centre** — Chennai,India
  Robotics Engineer — *Apr 2019 - Present*
  - **Robotic Guidance for Image Guided Minimally Invasive Spine Surgery**: An image guided robotic system for minimally invasive and open spine surgeries that are less painful and more affordable.
  - **Robotic Guidance for Image Guided Tumor Ablation**: Ablation of tumor using robotic system with precisely path planning and collision avoidance system.
  - **Ultrasound based 3D Image Reconstruction using Robotic Arm**: Real time 3D Ultrasound image was reconstructed by precise planning and targeting of UR5 robotic arm. The system can scan any surface with adaptive pressure in three variants namely - Linear, Tilt and Hybrid
- **Healthcare Technology Innovation Centre** — Chennai,India
  Project Engineer — *May 2017 - Apr 2019*
  - **Heart rate Estimation from PPG**: Developed a deep network for device agnostic heart rate estimation using PPG signal and was validated against standard public datasets.
  - **Arrhythmia Detection using Deep Network** : Deep neural network for arrhythmia classification using ECG signals. Core contribution of the proposed method was to visualize activation of specific segments of ECG signal during Arrhythmia.
  - **Induced Stress Detection**: Developed Machine learning model for induced stress classification based on in-house data. The model outperformed other existing methods and was implemented in real time scenario.

Publications

1. Shyam A, Vignesh Ravichandran, Preejith S.P, Joseph Jayaraj and Mohanasankar Sivaprakasam, 2019 PPGnet: Deep Network for Device Independent Heart Rate Estimation from Photoplethysmogram *arXiv preprint arXiv:1903.08912.*
2. S Amalan, A Shyam, AS Anusha, Preejith S.P, Akl Tony, Joseph Jayaraj and Sivaprakasam Mohanasankar, 2018. Electrodermal Activity based Classification of Induced Stress in a Controlled Setting.
3. Anusha A S, Sukumaran P, Sarveswaran V, Surees Kumar S, Shyam A, Tony J. Akl, Preejith S. P and Sivaprakasam, M, 2019. Electrodermal Activity Based Pre-surgery Stress Detection Using a Wrist Wearable.
4. Vignesh Ravichandran, Balamurali Murugesan, Shyam A, Sharath M Shankara-narayana, Keerthi Ram, Preejith S.P, Jayaraj Joseph and Mohanasankar Sivaprakasam, 2019. Interpretable Deep Neural Network for Single-Lead ECG Arrhythmia Classification.(Submitted to NeurIPS ML4H 2019)

Projects

- **RoboSimulate**: ROS based simulation software for manipulation of 6 DOF robots. The software will serve as a generic simulation tool for robotic manipulation by choosing Inverse kinematics solutions, path planning, adding collision objects and collision avoidance.
- **Virtual reality based robotic surgery (Ongoing)**: The idea of this project is to develop a virtual reality system which can seamlessly interacts with the robot thereby helping doctors in surgical environment.

Skills

- **Domain Interests**: Artificial Intelligence, Image gudied robotic surgery, Algorithm development, Reinforcement learning, Time series analysis.
- **Modules**: Pytorch, ROS, Scikit-learn, Python, Matlab, Mathematica.