SRIKRISHNA IYER

Senior Research Engineer
Data Analytics and strategic technology center (DA STC)
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RESEARCH INTERESTS

I am interested in exploring the theoretical and practical aspects of machine learning and deep learning, more specifically on domain generalization, domain transfer, interpretability and generative modeling applied to signal processing and computer vision.

EDUCATION

Nanyang Technological University, School of Electrical and Electronics Aug 2019 – Sep 2020
Master of Science (MSc) in Computer, Control, and Automation
- Thesis: Vital signs monitoring using mm-wave radars with machine learning
- Advisor: Dr. Muhammad Faeyz Karim

Vellore Institute of Technology, School of Electronics July 2015 – July 2019
Bachelor of Technology (BTech) in Electronics and communication
- Thesis: Structural health monitoring of railway tracks using IoT-based multi-robot system
- Advisor: Dr. Velmurugan T

RESEARCH EXPERIENCE

ST Engineering, Singapore Sep 2022 – Present
Senior Research Engineer
- Developed a graph-attention-based generative adversarial network for realistic spatio-temporal time-series generation and recommended a novel metric to evaluate fidelity and diversity of the generated data. (Submitted to NeurIPS2023)
- Currently developing a model-agnostic counterfactual explainable AI framework using generative AI for object detection models.
- Currently formulating a causal-inference-based interpretable-by-design framework for unsupervised domain adaptation in time-series sensor data.

ASMPT Pvt. Ltd. Singapore Sep 2020 – Aug 2022
R&D Data Analyst I
- Developed AI-based predictive metrology for quality measurement in manufacturing by utilizing time-series sensor data from wire bonding machines.
- Designed and implemented end-to-end ML pipeline encompassing data pre-processing, feature engineering, ensemble model training, and optimization using AWS codepipeline.
- Researched about online learning and domain transfer mechanisms to prevent performance drops due to data shifts, maintaining model effectiveness during live production, and reducing compute costs and manual retraining efforts.

NCS Pvt. Ltd., Singapore June 2020 – Aug 2020
Research Intern

- Designed and implemented a privacy-enabled people counting and tracking system using frequency modulated continuous wave (FMCW) nmmWave radars for medium to long-range detection.

Nanyang Technological University, Singapore Sep 2019- May 2020
Graduate Research Assistant (*with Dr. Muhammad Faeyz Karim*)

- Engineered a wireless health monitoring system using frequency modulated continuous wave (FMCW) mmWave radars and utilized the extracted phase signals for arrhythmia detection using a neural network.
- Incorporated a medically accepted biomarker named pulse transit time (PTT) to wirelessly measure (predict) blood pressure using a dual-radar system.

PUBLICATIONS

1. **GAT-GAN: A Graph-Attention-based Time-Series Generative Adversarial Network**
   S. Iyer, TT Hou
   Arxiv preprint (Under review at NeurIPS 2023)
2. **mmWave Radar based Vital Signs Monitoring and Arrhythmia Detection using Machine Learning**
   S. Iyer, L. Zhao, M. P. Mohan, F. Zhong, M. Y. Siyal, A. Alphones and M. F. Karim
   Sensors MDPI 2022
3. **Structural health monitoring of railway tracks using IoT-based multi-robot systems**
   S. Iyer., Velmurugan, T., Gandomi
   Neural Computing & Applications 2020
4. **Antlion optimization and Whale optimization Algorithm for multilevel thresholding segmentation**
   S. Iyer, A. P. Nadkarni and Padmini T. N
   Innovations in Power and Advanced Computing Technologies (i-PACT) 2019
5. **Support Vector Machine based Spectrum Handoff Scheme for Seamless Handover in Cognitive Radio Networks**
   S.Iyer, Velmurugan T, Prakasam P and Suresh Kumar T R
   Concurrency and computation: Practice and Experience 2023

PATENTS

1. ***Under review:*** **Non-Invasive Blood Pressure Monitoring Using Dual mmWave FMCW Radars with Machine Learning**
   S. Iyer, M.F. Karim, M. P. Mohan, F. Zhong and L. Zhao
   (Singapore Patent Application No. 10202009121P)