TEJESHWINE VISWANATHAN

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OBJECTIVE: Highly analytical individual with strong interpersonal and leadership skills. Currently pursuing a Graduate Degree at Rice University, seeking an internship for Summer 2022. Equipped with adept understanding of programming, data pipelining and machine learning concepts.

EDUCATION
- **Rice University** Master's in Electrical and Computer Engineering (Data Science specialization) | CGPA: 3.7/4   May 2023
- **SRM Institute of Science & Technology** Bachelor's in Electronics & Instrumentation Engineering | CGPA: 8.54/10   June 2021

SKILLS AND ABILITIES
- Programming Languages: Python, R, C/C++
- Software/Hardware: Pytorch, Tensorflow, Keras, Scikit-Learn, Tableau, Xilinx Vivado HLS, PYNQ, MATLAB, FPGA, Arduino, Fusion360, AutoCAD, Android Studio
- Certifications: Foundation Certificate in Data Science and Programming from **Indian Institute of Technology, Madras |** Mathematics and Bayesian Statistics for ML, Game Theory, Artificial Intelligence

PROJECTS
- **Baylor College of Medicine: Data Pipelining for Diagnosing SIDS**   Jan 2022-Present
  - Performed <u>exploratory data analysis</u> (involving wrangling through signal processing techniques, exploration, supervised and unsupervised machine learning algorithmic modeling, visualization, and statistical inferences) of ECG and breathing waveform data in genetically engineered mice models of 'Sudden Infant Death Syndrome'.
  - <u>Feature engineering</u> of specific features in ECG and breathing waveforms in **Python** to extract potential signatures of SIDS that can be used as a prognostic tool in prevention or early detection of succumbing to SIDS.
- **Video Captioning using Deep Learning**   Feb 2022-Present
  - Captioning videos after feature extraction using a pretrained deep learning model and using <u>sequence-to-sequence deep learning architectures</u> such as LSTMs for a frame-by-frame text generation of MSVD video database using **Keras** and **OpenCV.**
- **Hope Simpson Covid19 Data Analysis and Data Visualization**   Sep 2021-Dec 2021
  - Examined Hope Simpson's seasonally mediated virus spread hypothesis for SARS Cov-2 virus by analyzing the spread data from Johns Hopkins University's database and <u>visualized</u> a region-wise split using **Tableau.**
- **Building a Deep Learning classifier for handwritten data**   Sep 2021-Dec 2021
  - Developed a deep learning convolutional neural network-based <u>classification model</u> using **Tensorflow** and **Keras** to achieve a 97.03% accuracy for a Kannada based handwritten dataset, an extension to the MNIST dataset.
- **Utilizing reconfigurable nature of FPGAs for Deep Learning Algorithmic Implementation**   Aug 2021-Dec 2021
  - Coded simple vector applications and subsequent depth-wise convolutional algorithms in **C++** and imported to **Vivado HLS** and **PYNQ** framework for hardware deployment on **FPGAs.**
  - Used pragma directives like unrolling, pipelining, buffers, and kernel optimization to <u>reduce the latency</u> of the algorithm in comparison to non-embedded deep learning techniques.
- **Developing a preliminary screening technology for detection of paranasal sinusitis**   June-Dec 2019
  - Used <u>thermographic analysis</u> of control and test subjects to detect presence of paranasal sinusitis using segmentation in **MATLAB.** Used a pretrained deep learning model (**VGG16**) to classify segmented images with 96% accuracy.

EXPERIENCE
- **TVS Sundaram Fasteners (Autolec) Industrial Internship**   Jan-June 2021
  - Proposed a blueprint for an optimal automation-based system to decrease human touchpoints and <u>increase production efficiency</u> in a manufacturing plant (Autolec), based on evaluation of key factors such as operation run-time, cost, serviceability, and suitability to the shop floor.
  - Constructed a 2D model using Autodesk's **AUTOCAD** platform and extrapolated to a functioning 3D model using **Fusion360**. Devised a <u>QR code scanning</u> mechanism using **OpenCV** for ensuring part traceability.
  - Built a <u>SCARA (Selective Compliance Assembly Robot Arm)</u> using **Arduino** as a working model prototype for intermediate part transfer and built an app to control it using **Android Studio** in **C++.**
- **Kempegowda International Airport Limited Research Internship**   Nov-Dec 2019
  - Shadowed a senior automation engineer to understand the <u>practical applications of SCADA and PLC</u> based automation systems in an industrial airport setup (Fire Alarm System, Baggage Handling System, Visual Guidance Docking System etc.)
- **FLSmidth & Co Project Internship**   June-July 2019
  - Built <u>a SCADA mimic and developed a PLC ladder logic</u> in **Simatic Step7 platform** for a crusher in a cement manufacturing industry using a combination of alarms, temperature sensors, level detectors and vibration detectors.

ACTIVITIES AND HONORS
- AV Juliet, T Viswanathan, S Suresh, "Design of cost-effective material handling system", *American Journal of Physics (accepted)*
- Rice University: Social chair of ECE Graduate Student Association | Event Coordinator of Indian Students Association at Rice
- SRM Institute of Science and Technology: Organizing Committee for Scheme for Promotion of Academic and Research Collaboration (SPARC' 2020) | Designated emcee for department events | Editor of department newsletter, *Instrumentation Bullet* and university newsletter *Spectrum* | Model United Nations delegate in national conferences