Rahul Krishnamoorthy

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EDUCATION

University of California, Davis, *CA*
Master of Science in Electrical and Computer Engineering, (*GPA: 3.71*) *2021* (*Expected*)
Relevant Coursework: Deep Learning, Data Science, Reinforcement learning, Computer Vision, Digital Image processing, Autonomous Robotics

Anna University, *India*
Bachelor of Engineering in Electronics and Communication, (*GPA: 3.3*) *May 2019*
Relevant coursework: Object Oriented Programming, Data Structures.

WORK EXPERIENCE

Graduate Student Researcher
University of California, Davis *Sep. 2020 – Current.*

- **Endovascular Perfusion Augmentation for Critical Care (EPACC): Personalized and Adaptive Therapy for Resuscitation After Trauma**
  Guide: Prof. Chen-Nee Chuah, Jason Adams, M.D. *Jun. 2020 – Current.*
  - Designing end-to-end neural networks for AI-assisted fluid and medication delivery to optimize critical care management for detecting hypertension.
  - Combined one-dimensional convolution (1D-CNN) and Long short-term memory (LSTM) with a dimensional shuffle to enable multivariate time series classification and obtained a ROC-AUC of 0.89
  - Implemented weighted categorical cross-entropy loss function for training the model to classify hypertensive pigs on a highly imbalanced cardiovascular and ventilator data set.
  - Implemented nested cross-validation to effectively evaluate the model's performance on a small data set.
  - Evaluated the efficacy of attention mechanism with context vector on model's performance.
  - Finding the best sequence length that can capture enough information from the time series data.
  - Worked with a cross-functional team of doctors, statisticians, and engineers to better understand the results from a clinical standpoint.

PROJECTS

Intelligent Learning based Critical Care (ICCare): Early detection of Acute respiratory distress syndrome using convolutional neural networks
Guide: Prof. Chen-Nee Chuah, Jason Adams, M.D. *Feb. 2020 – Jun. 2020*

- Designed, trained, and evaluated an AI-driven model for early detection of Acute respiratory distress syndrome (ARDS) using one-dimensional convolutional neural networks on continuous ventilator waveform signals.
- Evaluated the deep neural network's ideal input length, which received an average test ROC-AUC score of 0.94 based on five-fold cross-validation.

Deep Convolutional Generative Adversarial Network (DCGAN) for recreating CIFAR-10 Images
University of California, Davis, CA *Apr. 2020 – Jun. 2020*

- Trained the Discriminator to classify the input as real or fake and Generator to generate better fakes by training on the CIFAR-10 dataset.
- Visualized the Generator's progression through all 10 epochs of training and compared the fake images with the real images once the training was complete.

Deep Q-Learning Network for Adaptive 2048
University of California, Davis, CA *Jan. 2020 – Mar. 2020*

- Designed an adaptive algorithm to make the game of 2048 challenging by obstructing common strategies to win the game and test if a reinforcement learning agent can find a novel strategy to solve the puzzle.
- Designed Policy and target networks with Experience replay and epsilon decay to approximate the state-action values based on the Bellman equation.
- The Deep Q-learning agent was able to obtain a maximum score of 512 after training for a total of 5000 episodes.

Blink to Word with Convolutional Neural Networks
University of California, Davis, CA *Sep. 2019 – Dec. 2019*

- Built a deep learning-based computer vision model to aid Amyotrophic lateral sclerosis patients by recognizing blinking patterns and mapping them to meaningful sentences.
- Implemented State-of-art computer vision algorithms (ResNet, Inception-V3, SqueezeNet), compared their performance, and achieved an overall accuracy of 99.20% with a prediction time of 94ms.

SKILLS

Computer: Python, Matlab, SQL, Arduino, R, Java, Git
Machine Learning and Data analysis: Scikit-Learn, Scipy, Numpy, Pandas, Matplotlib, NLTK, Tableau, Tensorflow, Keras, Computer Vision, Time series, Deep learning, Long Short-Term Memory (LSTM), Generative Adversarial Networks (GAN), Convolutional Neural Networks (CNN)
Certifications: Deeplearning.ai specialization, Machine Learning A-Z