Rochan Avlur Venkat

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Education

Mahindra École Centrale Hyderabad, India
Bachelors of Technology in Computer Science & Engineering *Jul. 2017 - May 2021*[1]
GPA: 9.0/10

Research Experience

- **Research Intern** University of Texas, Austin
  Mentor: Prof. Chandrajit Bajaj *Jun. 2020 - present*
  - Goal is to develop a system to accurately and efficiently predict prognosis of cancer biopsies.
  - Uses Multi-Task Reinforcement Learning & Variational Auto-Encoders to analyse large amounts of data efficiently by sampling a minimal amount of crucial information.

- **Training Neural Networks with Evolutionary Optimization** Mahindra École Centrale
  with Prof. Arya K Bhattacharya & Zakaria Oussalem *Jan. 2020 - Jul. 2020*
  - Studies the problem of training Neural Networks using Differential Evolution.
  - Uses task apportioning algorithm that attains in certain cases ×350 speedup on hybrid CPU-GPU architectures.

- **Feature extraction for Reinforcement Learning** Mahindra École Centrale
  with Dr. Achal Agarwal *Jan. 2019 - Jan. 2020*
  - Studies feature extraction techniques for Deep Reinforcement Learning in Atari 2600 environment.
  - Motivated by **Goel *et al.*** & **Li *et al.*** use of unsupervised image segmentation models & computer vision techniques in combination with DQN (& its variants), A2C and PPO.

- **Summer Research Intern** International Institute of Information Technology, Bangalore
  Mentor: Prof. Srinath Srinivasa & Chaitali Diwan *May. 2019 - Jul. 2019*
  - Developed NLP models for generating & validating semantic context and exposition coherence between learning resources in a learning pathway.
  - Developed a language model to generate virtual documents called **topic2document** from topic distributions.

- **Summer Intern** ShowUpHotels, Bangalore
  Mentor: Anupam Mediratta *May. 2018 - Jul. 2018*
  - Studied NLP (lda2vec, doc2vec & word2vec) and topic models (LDA, LSA, NMF & TFIDF).
  - Developed and published a Python package on PYPI called **sptm** (Sentence Prediction using Topic Modeling).

- **Video Compression Algorithm** Bangalore
  with Dr. Chandrashekar Vaidhyanathan *Aug. 2016 - May. 2017*
  - This work proposes a lossless compression scheme that can be extended to both Near-Lossless and Lossy compression of video data.
  - Extends on the work by **Davies *et al.*** on using Bayesian Networks for lossless dataset compression.

Publications

Training Convolutional Neural Networks with Differential Evolution using Concurrent Task Apportioning on Hybrid CPU-GPU Architectures
Rochan Avlur Venkat, Zakaria Oussalem, Arya K Bhattacharya
Under review

Lossless Video Compression Using Bayesian Networks and Entropy Coding
Rochan Avlur Venkat, Chandrasekar Vaidyanathan
IEEE Region 10 Symposium (IEEE TENSYMP), Kolkata, India, 2019

[1] Expected

Selected Projects

- **Distributed Compute Fabric using Mobile Devices**: Framework to exploit under-utilization of compute resources in smartphones
- **AI/ML for Cart Conversion**: Solution to cart-conversion problem built on themes of Visual Design, Social Value, Customer Design and Machine Learning
- **DinoEnv Gym Environment**: OpenAI Gym environment based on the Google Chrome Dino game
- **CineLog**: An Intelligent and Adaptive framework to assist theaters predict sales & footfall
- **Harmonize**: Proof of Concept of a decentralized blockchain based Music Publishing & Sharing Platform
- **oWatcher**: Discord bot to display detailed in-game performance statistics of a players in Overwatch by Blizzard Entertainment

Technical Skills

- **Programming Languages**: Python, C, R, Rust, C++, Golang, Java
- **Libraries**: OpenCV, Gym, PyTorch, NumPy, SciPy, Pandas, scikit-learn
- **Platforms**: Nvidia DGX, AWS, GCP, Linux
- **Tools**: LaTeX, Git

Awards & Service

First Place, Smart India Hackathon – 2020
Academic Scholarship, Mahindra École Centrale – 2017-2018
President (Fmr. Vice-President), Mahindra École Centrale Computer Science Club – 2019, 2018
Oral Presentation, Undergraduate Research Symposium, Mahindra École Centrale – 2019
Finalist, Intel International Science and Engineering Fair (ISEF) – 2017
Grand Award Winner & Finalist, Intel Initiative for Research and Innovation in Science (IRIS) – 2016
Finalist, Intel Initiative for Research and Innovation in Science (IRIS) – 2015, 2012
Most Innovative Solution, Open European Championship FIRST Lego League – 2014

Seminars & Workshops

- **Generative Art Workshop** — Hyderabad
  Conducted an introductory session on Generative Art as a part of the Computer Sci. Club — *November 2018*
- **Photo-Realistic Rendering Workshop** — Hyderabad
  Conducted a session on Photo-Realistic Rendering as a part of the Computer Sci. Club — *November 2018*
- **Python Workshop** — Hyderabad
  Conducted a week long Python Workshop for Freshers — *Sept 2018*