Rochan Avlur Venkat

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Education

- **Bachelors in Computer Science & Engineering** — Mahindra Ècole Centrale
  GPA: 3.6 (9.0/10.0) — *Aug. 2017 - Current*

Scholastic Achievements

- **Academic Scholarship** — Mahindra Ècole Centrale
  For top performing students in CSE Department — *2018*

Relevant Courses

- **Core**: Operating Systems, Principles of Programming Languages, Database Management Systems, Microprocessors, Theory of Computation, Design & Analysis of Algorithms, Digital Logic & Design of Computer Architecture, Discrete Mathematics, Data Structures
- **Mathematics**: Partial Differential Equations, Numerical Methods, Probability, Random Processes & Statistics, Linear Algebra, Calculus

Experience

- **Ongoing research in Deep Reinforcement Learning** — Mahindra Ècole Centrale
  ***Supervisor**: Achal Agarwal* — *Jan. 2019 - Current*
  - Exploring feature extraction in Reinforcement Learning problems, specifically tackling Atari 2600 game environment. Working with unsupervised image segmentation DL models, computer vision techniques and popular RL algorithms such as DQN, A2C and PPO. Conducting a study on interpretability and transferability of RL algorithms.
- **Summer Research Intern** — International Institute of Information Technology - Bangalore
  ***Supervisor**: Srinath Srinivasa* — *May. 2019 - Jul. 2019*
  - Worked on a research project that involved generation and validation of coherent learning pathways for online resources. Contribution included developing and integrating multiple NLP language models, topic models and LSTM models in pathway generation pipeline. Worked on developing and validating techniques for modelling 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** — Bangalore, India
  ***Supervisor**: Anupam Mediratta* — *May. 2018 - Jul. 2018*
  - Conducted an in-depth study on NLP models, specifically topic models such as LDA, LSA, NMF & TFIDF etc. Also focused on models such as lda2vec, doc2vec and word2vec. Developed and published a python package on PYPI called **sptm** (Sentence Prediction using Topic Modelling).
- **Research on Video Compression Algorithms** — Bangalore, India
  ***Supervisor**: Chandrashekar Vaidhyanathan* — *Aug. 2016 - May. 2017*
  - Worked on developing a video compression algorithm. Contributions included to algorithm design, implementation and testing. Outcome was a lossless compression scheme that can be extended to both Near-Lossless and Lossy compression using Bayesian Networks and Entropy Encoding.

Projects

- **AI/ML for Cart Conversion**: Worked in a team to develop a multifaceted solution to solve the cart conversion problem faced by e-commerce companies. Proposed solution was built on themes of Visual Design, Social Value, Customer Design and Machine Learning. Contribution included developing a recommender system using Bayesian Networks and ensemble learning (Classification and Regression methods) for cart abandonment prediction.
- **DinoEnv Gym Environment**: Developed an OpenAI Gym environment for research in Reinforcement Learning algorithms based on the Google Chrome Dino game.
- **CineLog**: Developed an Intelligent and Adaptive Framework to enable Multiplexes predict opening day sales of a movie & optimize schedule to maximize profits both real-time and in near-future; designed and developed LSTM Networks, Sentiment Analysis and core RNN.

- **Harmonize**: Developed a Proof of Concept of a decentralized blockchain based Music Publishing & Sharing Platform; designed and developed core blockchain and back-end services.
- **oWatcher**: Developed a Discord bot to display detailed in-game performance statistics of a players in Overwatch by Blizzard Entertainment.
- **A Sensor Based System to effectively track Geriatric Care and Dementia patients**: Was responsible in developing the full stack solution, including micro-controller programming, Android application development and back-end services.

Awards & Achievements

- ***First Place* - Dell Hack2Hire Hackathon, Hyderabad, India, 2019**: Proposed a multifaceted solution to the cart abandonment problem faced by e-commerce companies.
- ***Special Mention* - Pragyan Hackathon, Bangalore, India, 2018**: Showcased an Adaptive Movie Scheduling Framework for Multiplexes using RNN's, LSTM, Sentiment Analysis and Machine Learning
- ***First Place* - Brave Hackathon, Hyderabad, India, 2017**: Showcased a Decentralized Music Publishing and Sharing Platform built over 24 Hours
- ***Finalist* - Intel International Science and Engineering Fair (ISEF), Los Angeles, United States, 2017**: Showcased a research project titled - A Lossless Video Compression Technique Using Bayesian Networks and Entropy Coding
- ***Grand Award Winner & Finalist* - Intel Initiative for Research and Innovation in Science (IRIS), Pune, India, 2016**: Showcased a research project titled - A Lossless Video Compression Technique Using Bayesian Networks and Entropy Coding
- ***Finalist* - Intel Initiative for Research and Innovation in Science (IRIS), 2015 & 2012**: Showcased a research project on am Efficient Thermoelectric Refrigeration System; Showcased a solar cooker design that was inspired from the Parabolic and Box type designs
- ***Most Innovative Solution* - Open European Championship FIRST Lego League, Mannheim, Germany, 2014**: Showcased a research project on the Utilization of T2 Bacteriophages to fight Food Contamination
- ***Best Robot Design* - FIRST Lego League (FLL), Regionals, Bangalore, India, 2013**: Showcased a robot design that was highly efficient while still remaining simplistic

Technical Skills

- **Languages**: Python, C, R, C++, Golang, Java, NodeJS
- **Libraries & Frameworks**: ffmpeg, OpenCV, gensim, spacy, nltk, MALLET, OpenAI Gym, Pytorch, TensorFlow, keras, sklearn
- **Platforms**: Nvidia DGX, AWS, GCP, Linux, Raspberry Pi, Arduino

Positions of Responsibility

- **President** — Hyderabad, India
  Enigma, Computer Science Club at Mahindra Ècole Centrale — *2019 - 2020*
- **Vice President** — Hyderabad, India
  Enigma, Computer Science Club at Mahindra Ècole Centrale — *2018 - 2019*
- **Organizing Committee** — Hyderabad, India
  MECHacks - 36 hour Hackathon at Mahindra Ècole Centrale — *November 2018*
- **Organizing Committee** — Hyderabad, India
  Mozilla Hackathon - Organized a 36 hour Hackathon with Mozilla Reps Community — *October 2018*
- **Student Member** — Intl.
  ACM & IEEE Student Member; Sigma Xi Member — *Since 2018*

Conferences, Seminars & Workshops

- **Undergraduate Research Symposium, Mahindra Ècole Centrale** — Hyderabad, India
  Presented research work carried out @ IIIT-B; Selected for Oral Presentation — *Sept 2019*
- **IEEE Region 10 Symposium (IEEE TENSYMP)** — Kolkata, India
  Presented paper, IEEEXplore Digital Library: ISBN: 978-1-7281-0297-9 — *May 2019*
- **International Conference on Machine Learning and Data Science (ICMLDS)** — Hyderabad, India
  Attended two day conference held at Mahindra Ècole Centrale — *Dec 2018*
- **Generative Art Workshop** — Hyderabad, India
  Conducted an introductory session on Generative Art as a part of the Computer Sci. Club — *November 2018*
- **Photo-Realistic Rendering Workshop** — Hyderabad, India
  Conducted a session on Photo-Realistic Rendering as a part of the Computer Sci. Club — *November 2018*
- **Python Workshop** — Hyderabad, India
  Conducted a week long Python Workshop for Freshers — *Sept 2018*

Extra-Curricular Activities

- **Football** : Member of the Mahindra Ecole Centrale College Football A Team, represent the college at Inter-College Meets.
- **Swimming** : Member of the Mahindra Ecole Centrale College Swimming Team, represent the college at Inter-College Meets; Participated in the FINIS State level Sub Junior/Junior Championship event – Freestyle, Butterfly & Individual Medley events; Represented Delhi Public School Bangalore East School Swim Team in a number of inter-school swimming competitions. Secured additional credits in CBSE Board.
- **Running** : 1st Place in the 5 km 'Spirit of Wipro' marathon run (Open non-employee category); Timing: 21 mins
- **Music** : Learnt playing Tabla (Indian percussion instrument). Cleared the Aadhya, Madya, Purna, 1st year and 2nd year exams conducted by 'Bangiya Sangeet Parishad', Rabindra Bharati University, Kolkata.