Chaitanya Amballa

Machine Learning · Online Learning · Artificial Intelligence
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Education

Indian Institute of Technology Tirupati (IIT Tirupati) *Tirupati, India*

Bachelor of Technology (B.Tech.) | Electrical Engineering *Aug 2015 – May 2019*

- CGPA: 8.77/10
- Coursework: Pattern Recognition and Machine Learning, Deep Learning for Computer Vision, Image and Video Processing, Data Structures and Algorithms in Python, Design and Analysis of Algorithms, Statistical Signal Processing

Work Experience

TCS Research and Innovation Labs *Hyderabad, India*

Research Associate | Advisor: Dr. Sanjay P Bhat *Aug 2019 – present*

- Worked on sequential decision making problem modelled as stochastic linear bandit
- Thompson sampling with Bayesian Linear Regression
- Characterization and efficient computation of barycentric spanner(see [1])
- Comparison of well-known learning algorithms with our proposed method for dynamic pricing (see [3])
- Regret Analysis for the stochastic linear bandits
- Best arm identification for stochastic linear bandits

IIT Tirupati *Tirupati, India*

Project Associate | Advisor: Dr. K. P. Naveen *May 2019 – June 2019*

- Conducted extensive simulation studies that helped us in proposing [2] and [4]
- The different approaches we used to tackle the problem of coexistence both by using conventional as well as techniques from reinforcement learning helped me in strengthening my understanding of the problem is different

Lekha Wireless Solutions Pvt. Ltd. *Bengaluru, India*

Research Intern | Advisor: Dr. Sreenath Ramanath *May 2018 – July 2018*

- Worked on the physical layer components of 5G Networks, specifically on the synchronization part at the transmitter and receiver
- Developed a receiver algorithm for the down-link synchronization based on the cyclic prefixes (CP)

Publications

[1] Computing an Efficient Exploration Basis for Learning with Univariate Polynomial Features *Accepted*

Chaitanya Amballa, Manu K Gupta, Sanjay P Bhat *Feb. 2021*

35^{th} AAAI Conference on Artificial Intelligence (AAAI-21)

[2] Coexistence of LTE-Unlicensed and WiFi: A Reinforcement Learning Framework *Accepted*

K. P. Naveen, **Chaitanya Amballa** *Jan. 2021*

13^{th} International Conference on COMmunication Systems & NETworkS (COMSNETS 2021)

[3] Learning Algorithms for Dynamic Pricing: A Comparative Study *Accepted*

Chaitanya Amballa, Narendhar Gugulothu, Manu K Gupta, Sanjay P Bhat *July. 2020*

Workshop on Real World Experiment Design and Active Learning

37^{th} International Conference on Machine Learning (ICML 2020)

[4] Coexistence of LTE-Unlicensed and WiFi: optimization and Game-Theoretic Frameworks *Accepted*

Chaitanya Amballa, K. P. Naveen *July. 2020*

13^{th} International Conference on Signal Processing and Communications (SPCOM 2020)

Projects

Speech Enhancement using Deep Learning

Undergraduate Research

ADVISOR: Dr. Rama Krishna Sai Gorthi *Aug 2018 – Dec 2018*

- Removing various types of noises present in a real time speech signal for better visualisations and interpretations.
- Trained 2 Convolutional autoencoder type networks by using the log power spectrum features (with and without using past information)

Co-existence of LTE-Unlicensed and Wi-Fi: Optimization, GameTheory, Q-Learning

Undergraduate Thesis

ADVISOR: Dr. K. P. Naveen *Aug 2018 – May 2019*

- Determining the optimal number of time slots for LTE transmission in a frame by giving a fair amount of time for Wi-Fi when both LTE and Wi-Fi try to co-exist in an unlicensed spectrum
- Introduced a novel system model, formulated the optimization, game theoretic (see [4]) and Q-learning (see [2]) frameworks to the model and obtained their respective solutions

Blood Cell Classification and Disease Diagnosis

Undergraduate Research

ADVISORS: Dr. Rama Krishna Sai Gorthi & Dr. Subrahmanyam Gorthi *Sep 2017 - June 2018*

- Counting number of Red Blood Cells, classification of White Blood Cells into its categories from blood smear images
- Detecting diseases using Image Processing and Machine Learning (used Convolutional Neural Networks) techniques

Smart Hand Stick

Undergraduate Project

ADVISOR: Dr. Subrahmanyam Gorthi *July 2016 - Dec 2016*

- Improving the quality of life for visually impaired people by providing them a smart hand stick
- Alerts the user about any obstacle present in-front of them by sounding an alarm and vibrating a DC motor

Covid-19 Tracker

link

- Live Covid-19 cases, recoveries, and deaths using ReactJS and disease.sh APIs for the data *August. 2020*
- Cases by country and interactive maps

Skills

Programming Languages	Python, C/C++, Matlab, JavaSrcipt, SQL
Libraries & Frameworks	Tensorflow, Keras, Scikit, NumPy, Sympy, Git, Flask, React, LaTeX, SQLite, RESTful APIs, Linux, Raspbian, Arduino, Windows, LabView, Adobe Photoshop
Online Coursework	Data Structures and Algorithms in Python (MOOC NPTEL), Internet Of Things (MOOC NPTEL)
Languages	English, Telugu, Hindi

Awards & Achievements

1. **Sai Pratibha Puraskar**, Sri Sai Foundation for class X *2013*
2. **INSPIRE Scholarship**, Scholarship for undergraduate studies, awarded by the Department of Science and Technology, India for being in the top 0.1 percentile in the 12^{th} standard exams *2015*
3. **Gold medals**, NSO (National Science Olympiad), NCO (National Cyber Olympiad) *2007, 2008*
4. **Silver medal**, IMMO (International Master Mathematics Olympiad) *2013*
5. **2^{nd} prize**, Intra IIT Table Tennis and Cricket *2018*
6. **10^{th} prize**, in Inter IIT Tech Meet 2018, for the problem "Safety Device for Fishing Vessels" among all the IIT's *2018*

Positions of Responsibility

1 **House Captain**, team "Sivaliks", IIT Tirupati *2016-2017*

2 **Member of Technical committee**, IIT Tirupati *2017-2019*

3 **Department Sports Representative**, Electrical Engineering, IIT Tirupati *2017-2018*

Other Interests

Table tennis, Cricket, Photography, Video editing