

Chaitanya Amballa

MACHINE LEARNING · REINFORCEMENT LEARNING · SEQUENTIAL DECISION MAKING

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Education

University of Illinois at Urbana Champaign (UIUC)

Champaign, Illinois

MS | ELECTRICAL AND COMPUTER ENGINEERING

Aug 2022 –

- Relevant Coursework: Computer Vision, MDPs and reinforcement learning, Random processes, Introduction to optimization

Indian Institute of Technology Tirupati (IIT Tirupati)

Tirupati, India

BACHELOR OF TECHNOLOGY (B.TECH.) | ELECTRICAL ENGINEERING

Aug 2015 – May 2019

- Relevant 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

Hyderabad, India

RESEARCHER | ADVISOR: DR. SANJAY P. BHAT

July 2019 – present

- Worked on sequential decision making problems modelled as stochastic linear bandits
- 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 in continuous action space
- Best arm identification for stochastic linear bandits in continuous action space

IIT Tirupati

Tirupati, India

PROJECT ASSOCIATE | ADVISOR: DR. K. P. NAVEEN

June 2019 – July 2019

- Extended the work on the senior year project “Co-existence of LTE-Unlicensed and WiFi: Optimization, Game Theory, Q-Learning”
- Conducted extensive simulation studies that helped us in proposing [2] and [4]

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

Select Publications

[1] Identifying near-optimal decisions in linear-in-parameter bandit models with continuous decision sets

Published

SANJAY P BHAT, CHAITANYA AMBALLA

Aug. 2022

38th Conference on Uncertainty in Artificial Intelligence (UAI-22)

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

Published

CHAITANYA AMBALLA, MANU K GUPTA, SANJAY P BHAT

Feb. 2021

35th AAAI Conference on Artificial Intelligence (AAAI-21)

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

Published

K. P. NAVEEN, CHAITANYA AMBALLA

Jan. 2021

13th International Conference on COMMunication Systems & NETWORKS (COMSNETS 2021)

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

Published

CHAITANYA AMBALLA, NARENDHAR GUGULOTHU, MANU K GUPTA, SANJAY P BHAT

July. 2020

Workshop on Real World Experiment Design and Active Learning

37th International Conference on Machine Learning (ICML 2020)

Projects

Speech Enhancement using Deep Learning

Undergraduate Research

ADVISOR: DR. RAMA KRISHNA SAI GORTHY

Aug 2018 – Dec 2018

- Removing various types of noises present in a real time speech signal for better interpretation
- Trained two convolutional autoencoder type networks using the log power spectrum features (with and without using past information)

Co-existence of LTE-Unlicensed and WiFi: Optimization, Game Theory, 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 WiFi when both LTE and WiFi 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 GORTHY & DR. SUBRAHMANYAM GORTHY

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 GORTHY

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
- Cases by country and interactive maps

August. 2020

React Clones

- [Linkedin \(link\)](#)
- [Instagram \(link\)](#)
- [Netflix \(link\)](#)

Skills

Programming Languages Python, C/C++, Matlab, JavaScript, SQL

Libraries & Frameworks Tensorflow, Keras, Scikit, NumPy, SymPy, Git, Flask, React, LaTeX, SQLite, RESTful APIs, Linux, Raspbian, Arduino, Windows, LabView, Adobe Photoshop

Online Coursework Languages Data Structures and Algorithms in Python (MOOC NPTEL), Internet Of Things (MOOC NPTEL)
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 12th 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. **2nd prize**, Intra IIT Table Tennis and Cricket 2018
6. **10th prize**, in Inter IIT Tech Meet 2018, for the problem "Safety Device for Fishing Vessels" among all the IITs 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