Sudeep Raja Putta

RESEARCH INTERESTS Reinforcement Learning, Multi-Armed Bandits, Machine Learning Theory, Optimization

EDUCATION **Indian Institute of Technology, Kharagpur** July 2012 to May 2016
Bachelor of Technology (Honors), Computer Science and Engineering
CGPA: 8.88/10.0

RESEARCH EXPERIENCE **Xerox Research Center India, Bangalore** June 2016 to June 2017
Budding Scientist   Mentors: Theja Tulabandhula, Ph.D and Arun Rajkumar, Ph.D
Machine Learning and Statistics group, Algorithms and Optimization group

PUBLICATIONS
1. **Sudeep Raja Putta**, Theja Tulabandhula "Pure Exploration in Episodic Fixed-Horizon Markov Decision Processes". *AAMAS 2017.*

2. **Sudeep Raja Putta**, Theja Tulabandhula "Efficient Reinforcement Learning via Initial Pure Exploration". *RLDM 2017.*

RESEARCH PROJECTS **Euclidean Distance Matrix Completion Has No Spurious Local Minima** Work in Progress
Research Project, Xerox Research Center India Work in Progress
- Trying to prove that the Euclidean Distance Matrix Completion Problem(EDMCP) has a property similar to **Low Rank Matrix Completion** and **Matrix Sensing**.
- If proven, simple algorithms like SGD are guaranteed to find the Global Optimum as **all Local Minima are globally optimal**.

Pure Exploration in Episodic Fixed-Horizon Markov Decision Processes
Research Project, Xerox Research Center India
- Proposed an algorithm based on **PSRL** and **Pure Exploration Thompson Sampling** for Pure Exploration in episodic fixed horizon MDPs.
- Empirically showed that our algorithm achieves good posterior distributions within a fixed budget and can be useful in a setting termed **Reinforcement Learning with Practice**.

Memory based Function Approximation
Research Project, Xerox Research Center India July 2016 to Dec 2016
- Proposed **Q-value approximation** heuristics using **K-Nearest Neighbour** regression and **LRU** memory.
- Implemented dynamic nearest neighbour searching using R-trees and Investigated the dependence of the performance of the agent on the LRU memory size using environments in **OpenAI Gym**.

RESEARCH INTERNSHIPS **Tracking Idea Evolution in Discussion Forums**
Cognitive Solution Group, IBM Research Labs, Bangalore May 2015 to July 2015
- Developed heuristics for identifying the Ideas proposed in a forum and for tracking their evolution in form of a tree using **Latent Dirichlet Allocation**.

Text Recognition using Bidirectional LSTMs
Centre for Visual Information Technology, IIIT Hyderabad May 2014 to July 2014
- Trained **Bidirectional LSTM** neural networks with a **CTC** layer for recognizing words from raw images of Indian language scripts.

WORKSHOPS ATTENDED **Reinforcement Learning Summer School, University of Montreal** July 2017
Machine Learning Winter School at XRCI December 2015

ONLINE CERTIFICATION	**Machine Learning Engineer Nanodegree, Udacity**	June 2016

AWARDS **Winner** of **Xerox Research Innovation Challenge 2015**
For the work done on **Ambulance Response Time Optimization**
Runners up at **Microsoft Code Fun Do 2015**
For developing the mobile app **Artify**, similar to Prisma

TECHNICAL EXPERIENCE

Programming   Python, C++, C, Java
Packages   Numpy, Scipy, Scikit-learn, Keras, Cvxpy

EXTRA CURRICULAR ACTIVITIES

Blogging about mathematics, machine learning and algorithms
http://sudeepraja.github.io/blog/
Recent Posts:
- Thompson Sampling vs Pure Exploration Thompson Sampling
- Bayesian Inference and the bliss of Conjugate Priors
- Multi Armed Bandits and Exploration Strategies
- Die rolls and Concentration Inequalities
- A Derivation of Backpropagation in Matrix Form