

Santhosh Kumar Guguloth

Curriculum Vitae

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Interests

Machine Learning, Reinforcement Learning, Deep Learning, Database Systems (Query Optimization), Natural Language Understanding.

Education

- 2017–2019 **MTech, Computer Science and Automation (CSA)**, Indian Institute of Science, Bangalore, 7.0 CGPA.
- 2011–2014 **B.E.(Computer Science and Engineering)**, Chaitanya Bharathi Institute of Technology, Osmania University, Hyderabad, 67.85 %.
- 2008–2011 **Diploma in Computer Engineering**, Govt Polytechnic, Hyderabad, 73.45%.
- 2008 **Secondary School Certificate**, Bharath High School, Yellandu, Telangana, 88.66%, Mandal topper.

Work Experience

- 2015–2017 **Defence Electronics Research Laboratory, DRDO, Ministry of Defence, Hyderabad**, Position: Senior Technical Assistant 'B', .
- 2014–2015 **Computer Trainer, Sri Triveni Techno High School, Hyderabad**, .

Technical Skills

Languages **C,C++,Java and Python**
Frameworks **Tensorflow,HTML,CSS,JavaScript and LaTeX**

Research Projects at IISc

- 2018–Current **Predicting Robustness of SQL Query Plan using Deep Learning Techniques**, Platform: Java,Python; DB Engine: PostgreSQL, **MTech Project, Advisor: Prof. Jayant Haritsa ,Database Systems Lab.** .
- Due to the selectivity estimation problem, the native optimizer could pick a highly sub-optimal plan which causes the query to run for longer than usual time.
 - For such queries, state of the art Query Optimization algorithms for Robust Query Processing gives bounded run time guarantees.
 - Goal of my project is to use machine learning techniques to identify such queries and run using robust query processing algorithm.

- 2018-Current **Adversarial Learning for Neural Dialogue Generation (Chatbot)**,
E0 334 Deep Learning for NLP Course Project, Advisor: Prof. Shirish K Shevde.
- Train the system to produce sequences that are indistinguishable from human-generated dialogue utterances
- January - **Playing Atari 2600 Games with Deep Reinforcement Learning**,
 April 2017 *Platform: Python, Tensorflow,*
E1 277 Reinforcement Learning Course Project, Advisor: Prof. Shalab Bhatnagar.
- Goal of this project is learning to control agents directly from high-dimensional sensory inputs like vision using Q-Learning algorithm.
- January - **Analysing Deep NN with Information Bottleneck Theory**,
 April 2018 *Platform: Python ,*
E0 270 Machine Learning Course Project,
Advisor: Prof. Chiranjeeb Bhattacharya and Prof. Ambedkar Dukkipati;
Mentor: Shubham Gupta.
- Despite the practical success of Deep Learning, basic questions about the design principles of Deep Neural Networks (DNNs) such as the optimal architecture, the number of required layers, the sample complexity, and the best optimization algorithms, are not well understood.
 - In this project we studied the theory behind this and produced results to support this theory.
- January - **Implementation of PintOS operating system**,
 April 2018 *Platform: C; Emulator: QEMU ,*
E0253 Operating Systems Project, Advisor: Prof. Vinod Ganapathy.
- Given a basic operating system having minimal functionality, implement "bullet proof" operating systems modules such as Scheduling, User programs, Memory management and Disk systems.

Projects in Under-graduation

- 2013-2014 **A System to Filter Unwanted Messages from Online Social Network User Walls**, *Platform: Java, Database: Oracle, Final Year Project.*
- One fundamental issue in today's Online Social Networks is to give users the ability to control the messages posted on their own private space to avoid that unwanted content is displayed.
 - Goal of the project is to allow users to customize the filtering criteria to be applied to their walls through a flexible rule-based system, and build a Machine Learning classifier automatically labeling messages in support of content-based filtering.
- 2010-2011 **User Friendly Web Counselling System**,
Platform: HTML, CSS, JQuery, JSP, Database: MySQL,
Final Year Diploma Project.
- Goal of the project is to build a user friendly web application from scratch to setup an online web counselling system

Courses at IISc

Theoretical	Design and Analysis of Algorithms, Computational Geometry and Topology
Systems	Database Systems (Query Engine), Operating Systems, Program Analysis and Verification
Intelligent Systems	Probability and Statistics, Machine Learning, Reinforcement Learning, Deep Learning for Natural Language Processing

Pure Merit Scholarships which Sponsored in Diploma

2009-2011	IndianOil Merit Scholarships Scheme for 10+/ITI studies
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Extra Curricular Activities

2013	2nd Runners-Up Inter-College Chess Tournament
2007	Won First Prize in Mandal Level Chess Tournament

Hobbies

Playing Chess, Swimming, Travelling and Listening to Music