BHAVYA BHATT

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EDUCATION

Bachelor of Technology(Computer Science and Engineering) *2016 - 2020*
Indian Institute of Technology, Mandi Overall GPA: 7.9/10
School of Computing and Electrical Engineering

CBSE(Higer Secondary) *2016*
MDS Public School, Udaipur, Rajasthan Percentage: 93.5%

CBSE(Matriculation) *2014*
St. Gregorios Sen. Sec. School, Udaipur, Rajasthan CGPA: 9.6

TECHNICAL STRENGTHS

Computer Languages	C, C++, Python, JAVA (for android development)
Frameworks	PyTorch (Advanced), Keras (Medium), Android Studio (JAVA)
Other Interest	Mathematics of Deep Learning and Machine Learning, Stochastic Processes, Non-Euclidean geometrical methods, Group Theory

EXPERIENCE

Siemens Technology & Services Pvt. Ltd. June 2019 - August 2019
Software Research Intern

· Used program analysis tools like Atlas to run control flow analysis on large codebase which can further be used for extracting knowledge graphs.
· Implemented four different types (Tensor Product Composition, HOLE, ComplEx, QuatE) of Knowledge Graph embedding probabilistic architechures in PyTorch.
· Learned about Non-Euclidean real (for symmetric relations) and complex (for asymmetric relations) background geometries for embeddings in order to learn effective hierarchical patterns from the Knowledge Graph.
· Proposed a model for learnable background geometry (components of metric tensor itself are learnable parameters) along with embeddings (entity and relations) which can further be useful in manifold learning and other embedding visualization techniques.

Siemens Technology & Services Pvt. Ltd. December 2018 - Febraury 2019
Software Research Intern

· Processing internal service logs for building shift-right testing application.
· Used recurrent neural networks (LSTM) to predict most probable test cases which user can execute.
· Analyse the data for anomaly detection in the logs sequence dataset by probability estimation method.
· Also tested static probabilistic methods like PAM algorithm to achieve the above task.
· Documented the relevant codebase and procedures.

Tata Institute of Fundamental Research, Mumbai June 2018 - July 2018
Summer Research Intern

- Proposed a new derivation for path integrals of collapse models and other all particle dynamics theories.
- Argued that h tends to zero is not the limit to classical mechanics but rather some more robust mechanism to kill macroscopic superpositions.
- Explained that the above mechanism can be achieved through appropiate limit on collapse model parameters and formalised these limits mathematically.

PROJECTS

Why Neural Networks work ? Major Technical Project

- This is an Ongoing final year major technical project in the field of "Mathematics of Deep Learning".
- Project aims at developing new theoretical ideas which can provide mathematically formal answers to some of the profound questions in the field of deep learning.
- These questions include the mechanism of generalization, optimal architechures, phase transitions between memorization and compression phase etc.
- The project demands the need for exploring cross field topics from information theory, statistical physics, group theory and complexity theory and experiment with these ideas in code.
- As a result of this project, all the experimentation code is available in form of a Python library package **PyGlow** which can be installed from PyPI with command "pip install -i https://test.pypi.org/simple/ PyGlow".
- This library is also one of the attempts to develop keras like API in PyTorch backend.

Himachal Firespot Datapackage

- Forest Fire Notification App under Himachal government which provides an interface for the user to upload an image alert of the forest fire.
- This then circulate the GPS location of the sender to the registered authorities like fire brigades, government officials and reporters.
- This reduces the time to spot the location and prevent deaths of village people around the active forest fire region.

Euler Notes 2^{nd} year Topcoder Hackathon

- A web application indented for hearing impaired people.
- The app processes the real-time speech data into text and produces short summaries of the whole speech lecture with the use of machine learning (used extensions).
- It identifies main keywords and produces educational links in the same interface.

ACADEMIC ACHIEVEMENTS

Secured 1st position in TopCoder Hackathon for-Eulers Notes.

Secured 1st position in paper presentation and debate event held at technical fest of STAC club - Astrax 2019.

Coauthor of a Scientific Paper on "path integrals, spontaneous localization and classical limit". `https://arxiv.org/abs/1808.04178`

Secured All India Rank (AIR) 2324 in JEE Advanced (IIT-JEE) examination 2016.

RELEVANT COURSES

Core Courses
Advanced Data Structures and Algorithms
Pattern Recognition
Deep Learning and its Applications
Advance Database Practicum
Large Application Practicum
System Practicum (Operating System and Networking)

Other Courses
Linear Algebra
Real Mathematical Analysis
Probability and Statistics
Biotechnology
Statistical Mechanics

POSITION OF RESPONSIBILITY

Speaker at STAC
Space Technology and Astronomy Cell *IIT Mandi*

· Held position as a speaker and gave two talks on various topics of mathematics.

Teaching Assistant

· for the course on Advanced Data Structures and Algorithms, and Data Science Lab.

EXTRA-CIRRUCULAR

Participated in Vibgyor event organised by Art and craft club - Art Geeks, for two years (2017-2018).
Participated in flash mob event in the Tech-Cult fest of IIT Mandi, Exodia.