Nilanjan Debnath

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EDUCATION

The University of Texas at Dallas · Dallas, Texas, USA
PhD in Management Science · *Aug. 2022 – Present*

Chennai Mathematical Institute · Chennai, Tamil Nadu, India
Master of Science in Data Science · *Aug. 2019 – May 2021*

St. Xavier's College · Kolkata, West Bengal, India
Bachelor of Science in Mathematics · *Aug. 2014 – May 2019*

Don Bosco School · Bandel, West Bengal, India
Higher Secondary Degree · *March. 2012 – March 2014*

Don Bosco School · Bandel, West Bengal, India
Secondary Degree · *March. 2002 – March 2012*

EXPERIENCE

CAE Analyst · February 2022 – July 2022
Mercedes Benz, R&D India · *Bangalore, India*
- Analyzing Mercedes Benz and competitor carlines for ergonomic satisfaction
- Automating detection of ingress-egress using motion capture data
- Conducting Machine Learning bootcamps for other members of the team

Research Intern · May. 2021 – December 2021
Indian Statistical Institute · *Kolkata, India*
- Clustering streaming data using decision theoretic rough sets.
- Done under the supervision of Prof. Ashish Ghosh, Machine Intelligence Unit
- Manuscript under works

Machine Learning Intern · January 2021 – April 2021
DeLab Research · *Trivandrum, India*
- Used neural networks for regression, and time series to accurately predict and forecast renewable energy production for the next day
- Accurately predicted solar energy production better than state of the art industry standard.

Teaching Assistant · December 2020 – April 2021
Chennai Mathematical Institute · *Chennai, India*
- Teaching assistant for master in science, first year course mathematical analysis under Prof. Sundareswaran Ramasubramanian

Machine Learning Intern · May 2020 – July 2020
Coriolis Technologies · *Pune, India*
- Used NLP models from Spacy and Polyglot for named entity recognition to identify entities like names, addresses, locations.
- Used Microsoft Presidio to find structured entity types like PAN Card, Aadhar card, Driving License numbers.
- Used a neural network on OCR results to classify the documents.

Reading Project · December 2019 – January 2020
Indian Statistical Institute · *Kolkata, India*
- Data pre-processing(data cleaning, data transformation and data reduction).
- Data classification based on Bayes decision theory.
- Done under the supervision of Prof. Ashish Ghosh, Machine Intelligence Unit, Indian Statistical Institute, Kolkata, India

PROJECTS

Image Captioning with Attention January 2021 – April 2021
- Comparison of image captioning using attention and without attention
- Showcasing the problems with BLUE, METEOR and CIDEr forms of evaluating output captions
- Done under the supervision of Prof. Kavita Sutar, Chennai Mathematical Institute, Chennai, India.

Building a character language model January 2021 – April 2021
- Built a language model(bigrams and trigrams) using the covid 19 paper corpus.
- Used the language model to build a knowledge graph from it.
- Finally, built a character based language model using recurrent neural networks.
- Done under the supervision of Prof. Ramaseshan Ramachandran, Chennai Mathematical Institute, Chennai, India

The Linear Algebra behind search engines January 2020 – April 2020
- We used vector space model and an advanced vector space model called, latent semantic indexing to improve search results.
- Showcased the difference in results using different vector space models.
- Finally used relevance feedback to improve the model.
- Done under the supervision of Prof. Kavita Sutar, Chennai Mathematical Institute, Chennai, India

Crawling with Apache Nutch September 2020 - December 2020
- Our task here was to build a small scale web crawler with the help of Apache Nutch.
- Done under the supervision of Prof. Venkatesh Vinayakarao, Chennai Mathematical Institute, Chennai, India

Series of videos on Information Retrieval September 2020 – December 2020
- Published a short series of videos on youtube about information retrieval

Link for project reports

TALKS GIVEN

Introduction to Reinforcement Learning 19 May, 2021
DeLab Research *Trivandrum, India*
- Gave a talk on the introduction to reinforcement learning using multi arm bandits, markov decision process, monte carlo methods and temporal difference learning

ACHIEVEMENTS

Eugene McDermott Fellow, The University of Texas at Dallas	2022
All India Rank 3, Chennai Mathematical Institute Entrance Examination	2019
All India Rank 3, Indian Army LDC Appointments	2017
All India Rank 2, Tolani Maritime Institute Entrance Examination	2014
Qualified for JEE Advanced (Top 20 percentile)	2014
Represented school, college and district in various state level table tennis tournaments	2008-17

TECHNICAL SKILLS

Languages: Python, R, MATLAB, Octave, Java, C/C++, CQL

SOCIAL RESPONSIBILITIES

Aastha Academy Founder
- Led a team of 4 to make one of the fastest growing education centres for underprivileged children in the area.
- Spearheaded the spread of information among the deprived sections of the society about the importance of child education.

All India Catholic University Federation Working Member
- Collaborated with a team of 15 to visit Ghostomath, a remote village in the suburbs of rural Kolkata, to teach, interact and impart knowledge to the local village children, while also simultaneously instilling a sense of rooted social commitment.
- Collaborated with a team to visit St. Joseph's Old Age Home, to lend a helping hand to all the residents.

National Service Scheme Working Member
- Collaborated with a team of five who were given the responsibility to look over the delegation from Gostomath during the children's fair for underprivileged children at St. Xavier's College, Kolkata.