

Honey NIKAM

Senior Undergrad

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EDUCATION

- 2022 Indian Institute of Technology, Kanpur
Bachelor of Technology, Mechanical Engineering, CGPA : 9.11/10
- 2018 Arihant School of Arts, Commerce and Science, Pune
Maharashtra State Board of Secondary and Higher Secondary Education, 92.3%

PUBLICATIONS

- Sep 2020 May 2021 **Long Short-Term Memory Implementation Exploiting Passive RRAM Crossbar Array**
Honey Nikam, Siddharth Satyam, Shubham Sahay
Under Review : IEEE Transactions on Electron Devices on "Spintronics-Devices and Circuits"
➤ Implemented a Recurrent Neural Network model for text generation from scratch.
➤ Introduced a hybrid of resilient backpropagation and backpropagation through time algorithms for computation efficiency.
➤ Performed an extensive analysis of the proposed LSTM network implementation considering the non-ideal hardware artefacts such as device-to-device variations, non-linearity, noise, etc.
➤ Developed hardware-aware networks for realising compact and ultra-low power Recurrent Neural Network engines for mobile IoT devices.
RNN LSTM Neuromorphic computing
- Sep 2020 Jul 2021 **Accelerating Generative Adversarial Networks through Memristor Crossbars**
Siddharth Satyam, Honey Nikam, Shubham Sahay
Under Review
➤ Implemented a hardware-aware simulation of Generative Adversarial Networks to synthesize realistic looking images of the MNIST dataset
➤ Analysed the effects of true random noise as the input on the accuracy and energy efficiency of GANs.
➤ Performed a comparative study to predict the efficiency of the proposed neural network implementation in passive and active 1T-1R crossbar arrays.
GAN RRAM Memristor Crossbar Arrays

RESEARCH PROJECTS

- Aug 2021 Ongoing **Spectrum Based Fault Localization Using Graph Neural Networks**
Prof. Subhajit Roy, Department of Computer Science, IIT Kanpur
➤ Implemented the spectrum based fault localization problem as a graph neural network with test cases and components represented as graph nodes.
➤ Generated node embedding vectors by aggregation of messages from test nodes to component nodes.
➤ Computed component bug suspicion probabilities using embedding vectors through feed forward networks.
➤ Compared results with respect to state of the art metrics for fault localization such as Ochiai and Tarantula.
Spectrum Based Fault Localization Graph Neural Networks Deep Graph Library

WORK EXPERIENCE

- May 2021 Aug 2021 **Software Engineering Intern, Uber, Hyderabad**
➤ Implemented different time series models to predict Uber Eats data for the next 7 days such as city-wise gross bookings, web sessions etc.
➤ Built a Long Short Term Memory Network and Bayesian Neural Network implementation that provides time series prediction along with uncertainty estimation
➤ Implemented and analysed classical time-series models such Autoregressive Integrated Moving Average, Exponential Smoothings and packages such as Prophet (Facebook Open Source), orbit (Uber Open Source) to find the best fit model for predictive forecasting.
➤ Collaborated with Uber's in-house ML platform Michelangelo
time-series forecasting Bayesian LSTM ARIMA

Jul 2019	Summer Intern, Talentpod Techserve, Bangalore
May 2019	github.com/vrukshanikam/snowflake <ul style="list-style-type: none"> Built a Django web application with a user's social media reliant MongoDB database and a TensorFlow powered low level cognitive filtering news recommendation system. Used news APIs for searching and retrieving live articles where the queries and keywords were extracted from user's emails such as keywords in the sender/receiver, subject, tf-idf ranked keywords in the mail body Experimented with libraries such as NLTK, TensorFlow, Keras, scikit-learn for better classification, keyword extraction, and document analysis to improve the relevancy between the news articles and the user's mails.

[Recommender Systems](#)
[NLP](#)
[TensorFlow](#)
[Django](#)
[MongoDB](#)

</> PROJECTS

Mar 2020	Differential Text Highlighter, Association of Computing Activities, IIT Kanpur
Feb 2020	<ul style="list-style-type: none"> Mentored a group of six students on the basics of Natural Language Processing Built a text highlighter that highlights text in different shades on the basis of importance of sentences using extractive text summarization.

[NLP](#)
[NLTK](#)

Apr 2021	Computational Fluid Modelling, Prof. K. Muralidhar, IIT Kanpur
Feb 2021	<ul style="list-style-type: none"> Performed higher order explicit schemes to solve systems of differential equations. Studied discretization errors, compared the time complexity and stability of different order schemes. Numerically simulated velocity distribution of turbulent flow using Navier Stokes equations.

[Fortran](#)
[MATLAB](#)

Mar 2019	Fundamentals of Theoretical Computer Science, Association of Computing Activities, IIT Kanpur
Jan 2019	<ul style="list-style-type: none"> Studied preliminaries of Theory of Computation, Discrete Mathematics and Number Theory. Dived deeper into the concepts of Turing Machines, Undecidability, Context-free grammars and languages, Finite Automata, Regular Expressions etc. Worked on proving the equivalency of Multi-Tape Turing Machine and Single-Tape Turing Machine.

[Finite Automata](#)
[CFL](#)
[NP](#)

RELEVANT COURSEWORK

Programming	Data Structures and Algorithms, Fundamentals of Computing
Mathematics	Linear Algebra, Multivariable Calculus, Complex Analysis, ODE, PDE
Electronics	Introduction to Electrical Engineering, Power Electronics, Control Systems
Psychology	Social Psychology, Human Perceptual Processes, Cognitive Neuroscience

TECHNICAL SKILLS

Languages	Python, C++, C, HTML, CSS, JavaScript
Frameworks	NodeJs, Django, TensorFlow, Matplotlib, Keras
Utilities	MySQL, Git, MongoDB, Heroku, Linux Shell Utilities, \LaTeX , MATLAB

ACHIEVEMENTS

Examinations	Goethe-Zertifikat A2 Fit in Deutsch 2 (German Examination Level A2) Regional Mathematics Olympiad (State-Level), Merit Certificate Maharashtra Talent Search Examination (State-Level), Merit Certificate
Competitions	Pitch Prime 2019 Winner, Idea pitching event for the students of IIT Kanpur
Dance	Bharatnatyam Prarambhik, Tilak Maharashtra Vidyapeeth, Pune

EXTRACURRICULARS

Leadership	Senior Executive, Entrepreneurship Cell, IIT Kanpur Secretary, Book Club, IIT Kanpur
Positions	Student Guide and Academic Mentor, Counselling Service, IIT Kanpur
Talks	Department of Cognitive Science, IIT Kanpur 2016 United States Elections : In-group Favoritism and Out-group Hostility How Intelligent is Perception ? Are Sensation and Perception Separate Stages ? The Circular Problem of Attention and Perception