RITIK SAXENA

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A highly motivated and skilled computer science professional with a strong foundation in software development, data structures, and algorithms. Proficient in multiple programming languages including Python, and C++ with strong background in database management and optimization with experience in SQL and q/kdb. Constantly thriving and dedicated to continuing professional development and staying up-to-date with industry trends.

EDUCATION

Indian Institute of Technology, Kanpur , *B.Tech, Electrical Engineering,*   **GPA: 3.5 Jun 2022**
Minor in Computer Systems, Minor in Machine Learning
Class XII (CBSE), Kulachi Hansraj Model School, Delhi,IN   **GPA: 3.8 May 2018**
High School (Class X (CBSE)), Kulachi Hansraj Model School, Delhi   **GPA: 3.8 May 2016**

TECHNICAL SKILLS

Languages and Tools:	C/C++ (proficient), Python (proficient), q, LATEX, Verilog, MATLAB
Web and Databases:	HTML, CSS, JavaScript, NodeJs, MySQL, q/kdb
Utilities and Softwares:	Pytorch, OpenCV, TensorFlow, Keras, Scikit Learn, Pandas, MS Excel
Statistical Analysis	Linear Algebra and ODE, Partial Differential Equations, Probability and Statistics, Multivariate Calculus, Complex Analysis
Machine Learning	Decision Tree, Multiple Regression, Logistic Regression, Random Forest, Clustering, k-NN, SVM
Certifications	Deep Learning Specialization, Reinforcement Learning Specialization
Soft Skills	Innovative, Problem Solving, Enthusiastic, Self-driven, Efficient Communications

BUSINESS EXPERIENCE

Algo Quant Analyst , Nomura Structured Finance, *Mumbai, IN*   **May 2022-Present**
• Working on in house trading strategy on FX with analysis carried out using q/kdb for fast database querying of high frequency data and python for visualization
• Improved robustness and responsiveness of the strategy to sudden market movements to avoid bad trades & reduce losses

Algo Strats Intern , Nomura Structured Finance*, Mumbai, IN*   **May2021-July 2021**
• Investigated the relationship between FX rates and parameters related to derivatives using Regression models
• Validated the relevance of a Bayesian Inference based trading strategy on G10 FX Rates over the last decade's data using metrics such as trading accuracy , sharpe ratio, calmar ratio.
• Implemented the strategy in Python, performed PnL analysis using the generated signal and compared against a Buy&Hold Strategy

Full Stack Developer Intern, Nutanix, Summer Of Code*, Kanpur, IN*   **May 2019-July 2019**
• Worked in a team of five to develop a full stack web app, to automate tasks in a professional set-up, using MERN stack
• Incorporated features like Group Chat, Announcements, To-Do List to support government employees' day to day activities thereby increasing transparency and improving workflow by reducing latency

POSITION OF RESPONSIBILITY (ACADEMIC)

Strategy Mentor, Unacademy *INDIA*   **Apr 2021-Nov 2021**
• Responsible for catering 35 students and help them to strategize their studies, motivate them and help them to improve their performance.

Head, Software Division, Team VISiON*, INDIA*   **Jul 2020-July 2021**
• Leadership: Lead a team of 20 as the software head for participation in IGVC-2021
• Teachings: Conducted sessions to embark technologies such as ROS, C/C++ among 16 freshmen

Company Coordinator, Student Placement Office, IIT Kanpur*, INDIA*   **Jul 2019-Mar 2020**
• Part of a 3-tier team responsible for managing pre-placement talks, invigilation of placement tests and conduction of smooth interview process for companies as well as students
• Responsible for management of internship and placement process for 600+ and 1200+ students respectively

ACADEMIC PROJECTS

VAEs meet Energy based models   **Mar 2021- May 2021**
• Implemented the paper VAEBM: A Symbiosis between Variational Autoencoders and Energy-based Models on MNIST, CelebA 64 and Chairs dataset
• Combined VAE and Energy based models to leverage their benefits leading to the correction of out-of-distribution images generated by the VAE and speeding up of EBM iterations

One Sample Stochastic Subspace Frank Wolfe   **Aug 2020- Dec 2020**
• Formulated 2 novel variants of Frank Wolfe algorithm for Convex Optimization in stochastic settings and derived an O(1/ T) oracle complexity through rigorous mathematical analysis
• Achieved reduction of per iterate time complexity by leveraging dimensionality reduction of subspace to carry out the optimization

Audio Event Classification and Detection   **Sep 2020 – Dec 2020**
• Designed a model for classifying 10 different audios - dog bark, children playing, AC noise, etc of varying input size
• Used a deep learning based model to first classify the event then detect for multiple events concatenated in a single audio file

Smart Gamer - Electronics Club Project   **May 2019 – Jul 2019**
• Built a 2D shooting pygame using OOP in python , performed object detection using OpenCV to segment bottle cap from the video feed and played it with the cap's movements
• Applied Q learning and Deep Q Learning algorithms to train the agent in the game
• Used Intel RealSense D435 depth camera to play 3D game ViZDoom using gestures

Self Stabilising Gimbal   **Oct 2019**
• Built a self-stabilizing cube which maintains its 3D orientation in space using Arduino Nano Microcontroller, MPU6050 for inertial measurements and servo motors
• Can be used in photography to hold camera equipment steady and capture of smooth images
• *First Runner Up, Intra-College Tech Competition*

Coursework:

Fundamentals of Computing	**Data Structures and Algorithms**	**Computer Organization**	**Introduction to Machine Learning**
Operating Systems	**Digital Networks**	**Probabilistic Modelling and Inference**	**Computational Cognitive Science**
Optimization for Big Data	**Machine Learning in Signal Processing**	**Reinforcement Learning Specialization**	**Deep Learning Specialization**

EXTRA CURRICULAR ACTIVITIES
•   Volunteer at Shiksha Sopan, a social initiative by IIT-K to educate underprivileged students of local area
•   Qualified for Round 1 of Facebook Hacker Cup, 2020
•   Hacker Rank Problem Solving Rank 3252 (6-star Badge Holder) ID :- ritiksaxena007
•   Participated in Group Dance event in Galaxy'19, Cultural Championship of IIT-K