

Tarush Singh

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Education

Masters in Information Systems

Northeastern University, Boston MA (GPA: 3.65/4.0)

Aug 2022 - Apr 2024

Bachelor of Science in Electronics and Communications Engineering

SRM Institute of Science and Technology, Chennai

July 2014 - May 2018

Professional Experience

Natural Language Processing (NLP) Development, HappSales PVT LTD

Sep 2019 - Apr 2022

- Worked as NLP and deep learning Head tasked with designing NLP Solutions for startup HappSales CRM product
- Presented a solution of using Natural Language Understanding (NLU) made in RASA to perform CRUD operations within the app
- The NLU solution was designed to also pre populate data based on user input before providing appropriate form with filled details for create operations
- Drafted development of fine-tuned NER based parametric SQL data fetching for Question Answering which led to development and implementation of updating capabilities and setup Microservices using Terraform on AWS
- Provided solutions to a 5 member team consisting of app developers to integrate an AWS Lambda solution for the NLP engine hosting
- Boosted productivity by 10-15% by reducing UI navigational clicks by 4 and improved data entry speed by 35%
- Worked with clients to oversee the acceptance and dissemination process
- Wrote a detailed documentation of the NLP engine tools and common FAQ solutions as references for future project members

Project and Research experience

Weather forecast, Northeastern University

Nov 2023 - Dec 2023

- Demonstrated a deep learning model that used cloud images and meteorological data to give weather forecast for rain
- Used CNN as image feature extractor and LSTM for meteorological data to combine multiple input sources
- Predicted the probability of rain with an 84% F1-score accuracy for the next two days in the sequence

Scene description, Northeastern University:

Apr 2016 - Dec 2016

- Designed a custom Vision Transformer model that used attention mechanism for image explanation on COCO
- Studied the model's explainability by plotting the attention weights over an image and reached a 92% accuracy
- Optimized the inference speed using TensorRT, resulting in an increase of 25% inference speed

Model evaluation and parameter mapping, Northeastern University:

Feb 2023 - Apr 2023

- Examined concepts of data science dealing with feature selection, null hypothesis, correlations and algorithm selection
- Validated the initial understanding of the machine learning predictions using SHAP analysis for improving performance
- Authored insightful research article on Medium, exploring in-depth concepts like bagging and boosting techniques([Link](#))

Product upsell recommendation, HappSales PVT LTD

Dec 2021 - Apr 2022

- Analyzed a company's product catalog and detect trends in selling patterns by the sales team
- Employed Neo4j to find complex relationship between products collectively bought enhancing upselling opportunities
- Developed an end-to-end upselling recommendation engine with 70-75% accuracy offering tailored product suggestions

Dominex, Northeastern University:

Sep 2023 - Nov 2023

- Spearheaded a distributed drug development tracking app in Java enabling real time drug stage monitoring, time to market and FDA approval and implemented tailored UI pages for seamless user experience and data access
- Engineered cross-organization collaborations fostering effective communication and coordination with insightful reporting([Link](#))

Medals and Certifications

- Presented a paper in IEEE IROS 2018 Fan challenge in Spain on 7-DOF robotic manipulator
- Won 2 golds and 1 bronze in "RoboGames 2018" held in the USA for Bipedal robots.
- Won 2nd position for the navigational shoes for visually impaired at Konvolve SRM University
- Won silver at 'Indo US Robo League 2015' held in IIT Mumbai
- Deep Neural Networks May 2019 Improving Hyperparameter tuning, Regularization and Optimization Coursera Certification

Technical skills

Programming Language: Python, Java, HTML, SQL, C/C++, CSS

Cloud: AWS Lambda, AWS EC2, AWS Elastic search, AWS Sagemaker, AWS SNS, Azure Function, Azure VM, REST API, Terraform, Kubernetes, FLASK, RESTful services

AI Tools: Scikit-learn, OpenCV, Tensorflow, RASA, TfLearn, AutoML, Keras, Huggingface Transformers, XGBoost, GBM, NLTK, SpaCy, PyTorch, GLM, ResNet, Fast-RCNN, Alexnet, YOLO, Vision Transformers, ONNX, TensorRT

Development tools: Postman, Git, Jupyter Notebook, Weights&Biases