Mudit Tiwari

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Education

- **Indian Institute of Technology, Guwahati** — Guwahati, India
  Master of Science in Mathematics & Computing; CGPA: 6.9 — *July 2016 – May 2018*
- **Sri Venkateswara College, University of Delhi** — Delhi, India
  Bachelor of Science in Mathematics; CGPA: 8.7 — *July 2013 – June 2016*

Experience

- **CyborgIntell** — Bangalore, KA
  Data Scientist — *March 2019 - Present*
  - **Explainable AI**: Researched and developed an explainability module for an AutoML product. The module aided in a further explanation of black-box models and later on displayed as the USP for the product. It comprised of state of the art explanation algorithms including Null Importance, LIME, SHAP, PDP, etc.
    Technologies Used: Python, Pyspark, H2O, SKLearn, Pandas, Numpy, REST.
  - **Decisioning Engine**: Developed a decision & optimization engine that performed constrained optimization of the dependent variable to get the recommended value of an independent variable. The algorithm is based on Bayesian Optimization, and partial dependence plots. It is used for pricing analytics, interest rate recommendation, credit scorecard development.
    Technologies Used: Python, Pyspark, H2O, PyTorch, SKLearn, Pandas, Numpy, hyperopt, REST.
  - **AutoML Pipeline Development**: Implemented an end to end scalable pipeline for fully automated PySpark modeling. This pipeline included data treatment, feature selection, model selection, hyperparameter tuning, etc.
    Technologies Used: Python, Pyspark
  - **Plot API**: Developed Plot APIs to generate plots. These plots are used to diagnose and visualize the regression model.
    Technologies Used: Python, Pyspark, H2O, Seaborn, Matplotlib, Pandas
  - **Auto Documentation**: Developed a module to generate fully automated documentation consisting of all model-related information including model performance, feature importance, feature selection, feature engineering, etc.
    Technologies Used: Python, LaTeX
  - **Analytics**: Managed cross-industry ML use cases from BFSI, Retail, Petroleum, Media, Logistics, Consulting, etc. Performed post model analysis which involved loan scorecard, lift-gain analysis, risk-adjusted pricing recommendation, churn targetting, optimization, etc.
    Technologies Used: Python, Excel/calc
- **Teknuance** — Chennai, TN
  Research Analyst - Machine Learning and Mathematics — *July 2018 - March 2019*
  - **Data Base Algorithm Design**: Used hashing to design the core record dumping and fetching algorithms for a file-based database. Also, designed a graph-based catching layer that reduced the computational complexity by 500 percent.
  - **Knowledge Graph**: Researched and designed the architecture of core knowledge graph's algorithm. It is based on entity-relation-entity theory, and was used onto top of a chatbot.
    Technologies Used: Python, NetworkX
  - **Meeting Schedular**: A python-based meeting scheduler to schedule for an office management tool.

Projects

- **Flocking Algorithm: A Simulation Study**: The flocking algorithm is a famous algorithm used in Artificial life behavior, animation, gaming, etc. Designed a GUI based simulation of the flocking algorithm. Proposed the algorithm for reducing the time complexity from $O(n^2)$ to $O(n \log n)$ using KDTree. **Reference : Prof. Partha Sarthi Mandal**.
- **Restricted Boltzman Machine**: Used python, numpy to implement and apply RBM for dimensionality reduction. The algorithm mapped a picture to a lower dimension with minimal reconstruction error.

Achievements

- **Academics**
  - **Joint Admission for Masters - 2016**: Secured AIR 249 among 10000+ candidates in JAM 2016 taken in Mathematics.
  - **GATE - 2018**: Qualified GATE MA with rank 902
  - **Inspire Scholarship**: Received Inspire Scholarship (2013 batch) from MHRD, Govt of India.
- **Competitive Data Science [Only Showing Few]**
  - **Analytics Vdihya - Bain & Company Forecasting Challange**: Secured rank 2 among 2500+ participants.
  - **Analytics Vidhya - AmExpert by American Express**: Secured rank 5 among 3000+ participants, won a medal
  - **Kaggle - Ashrae Great Energy Predictor**: Got rank 53 among 3600+ submissions, won a silver medal.
  - **Kaggle - Catch Me if You can [Intruder Prediction]**: Got 84 rank among 3800+ submissions.

Technical Skills

Python, Pytorch, H2O, PySpark, Linux, Vim, GCP, Excel/Calc, C, MATLAB.