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EXPERTISE

- **Data Fusion**: Integration of conflicting data from structured and unstructured data sources; Probabilistic and deterministic entity resolution techniques.
- **Point of Interest and Text Data**: Deep knowledge of business location and point of interest data; Google Places, Bing Entity Search and other POI APIs; Text/string data processing.
- **Rapid Prototyping**: Developing innovative data products using machine learning from conception up through design for prototyping AND productionalizing using Agile.

EDUCATION

- **Indian Institute of Technology (IIT) Kharagpur**   Kharagpur, India

  Master of Technology in Instrumentation Engineering   Jul 2007 - May 2012

  Bachelor of Technology in Electrical Engineering

  Cumulative GPA: 7.85/10; Department Rank: 5 out of 22

EXPERIENCE

- **American Express**   New York, NY

  Product Manager   Apr 2019 - Present

  - **Merchant Coverage Measurement**: Responsible for defining the objectives and key results for merchant coverage in 10 EU and LACC markets. Lead the development of data-driven techniques for defining merchant acceptance rates, used for driving sales targets.
  - **Prospect Marketing**: Managed the creation of a prospect marketing data product that identifies and prioritizes businesses for merchant acquisition. Supervised data science, engineering and operations teams for developing the product from conception which is widely used by 300 sales team members.

  Data Science Manager   Nov 2015 - Apr 2019

  - **Data Fusion**: Using Bayesian inference, built a merchant database by integrating conflicting information from multiple structured data sources like Yelp, TripAdvisor, Foursquare, D&B etc.
  - **Industry Classification**: Built a hierarchical classification model using an ensemble of gradient boosting and pseudo relevance feedback to classify merchants into a 30,000 industry categories. Created features using word embeddings on text data scraped from web search results.
  - **Location Intelligence**: Developed a multi-language address parsing tool using deep learning that resulted in an improvement of 12% in geocoding accuracy.
  - **Offer Recommendations**: Developed a recommender system using Restricted Boltzmann Machines (RBMs) to improve relevance of merchant offers that resulted in a lift in precision of 15% over an existing technique.

- **American Express India**   Gurgaon/Bengaluru, India

  Data Scientist   Jul 2012 - Oct 2015

  - **Entity Resolution**: Developed an entity resolution algorithm to match business records using Support Vector classifier on features extracted using multiple string comparison functions.
  - **Card Member Marketing**: Identified card member lookalikes using k-Nearest Neighbor algorithm to create targeted merchant marketing campaigns that improved offer response rate by 65%.
  - **Spend Trigger Model**: Created a spend trigger model that predicts the likelihood of spend in a given industry using transaction patterns identified using association rule learning on past transaction data.

- **Flagstone Reinsurance**   Hyderabad, India

  Intern   Summer 2011

  - **Classification**: Developed a sentiment analysis model to classify market research reports and news articles using random forests.
  - **Price Forecasting**: Improved an existing asset price forecasting model using text features extracted from market research reports.

Relevant Course Work

- **IIT Kharagpur**: Artificial Intelligence, Finite Automata and Formal Languages, Computer Software, Computer Architecture and Operating Systems, Programming and Data Structure, Digital Image Processing, Digital Speech Processing, Advanced Numerical Analysis, Transform Calculus, Probability and Stochastic Processes
- **Coursera**: Algorithms Specialization, Deep Learning Specialization, Functional Programming Principles in Scala
- **Other**: MIT-OCW: Statistical Mechanics, Youtube: Introduction to Machine Learning (CMU), Computational Algebraic Topology (American University)

Skills

- **Languages**: Python, C/C++, Scala, SQL/Hive, Matlab, HTML   **Technologies**: Tensorflow, Hadoop, Spark

Projects

- **M.Tech Thesis**: Developed a real-time vein imaging system that detects and segments veins in video feed captured using infrared light. Demonstrated its application for use in intravenous injections and built a pattern recognition tool for biometric identification using vein patterns.

- **Control Systems Lab, IIT Kharagpur**: Designed a multi-sensor network that classifies and measures various physical activities. Developed a controller that fuses data from the sensor network and controls the rate of an artificial heart.