Puneet Ludu

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Experience 11 years

Machine Learning Engineer, *Sep 2021 – Present*, **Zillow (Zestimate)**, Remote 3.5Y

- **Interactive CMA & Realtime Valuation** *(Django, DocumentDB, PyTorch)* [Siamese Neural Network]
  Architected and led the end-to-end development of an interactive *Comparative Market Analysis* (CMA) platform with Realtime Valuations, Property Embeddings and Comps API, providing agents and buyers with data-driven tools to support home pricing, enhancing client decision-making and driving potential revenue through valuation services.
  Impact: 0 to 1 project to boost engagement and satisfaction, paving the way for ***new revenue streams***
- **Zestimate Infrastructure Modernization** *(Python, Terraform, AWS, Kubeflow, Metaflow, Docker, Gitlab CI)*
  Led the modernization of a critical valuation ML infrastructure, transitioning to more cost-effective, containerized technologies, resulting in substantial annual cost savings and enhanced system scalability.
  Impact: Achieved operational improvements and annual cost savings of $500k.
- **Technical Innovation & Team Collaboration**
  Integrated advanced machine learning tools into team workflows and established coding standards, significantly enhancing collaboration and experiment tracking capabilities. Contributed to open-source projects.
  Impact: Improved overall team efficiency, code quality. Reduced On-Call alerts by ***95%***
- **Leadership & Mentorship**
  Managed interns and Mentored new hires and junior engineers, fostering technical skill development and guiding them through project contributions.

Machine Learning Engineer, *May 2020 - Sep 2021*, **OkCupid (Match.com)**, New York City 1.5Y

- **Discount Optimization** *(Python, Keras, TensorFlow, Weights and Biases)* [Wide&Deep]
  Lead the efforts to optimize subscription pricing(discounts) to maximize the revenue for OKCupid, Implemented end-to-end ML pipelines, feature engineering, modelling, alerting etc.
  Impact: Increased overall revenue by ***6%*** *through A/B testing against assigned prices*

Machine Learning Engineer, *Apr 2015 - May 2020*, **FactSet**, New York City 5Y

- **Earning Call Speaker Identification** *(Python, TensorFlow, Keras)* [Spectrograms, CNN] [Presentation]
  Developed and deployed an end-to-end speaker identification system to identify speakers in real-time during company quarterly earnings calls using computer vision and deep neural networks.
  Impact: In early testing it was estimated to save around ***20%*** *human-hours*
- **Private-company fact extraction** *(Python, Keras, Sagemaker, DataBricks)* [ELMo, BiLSTM, Blazingtext]
  Lead the efforts to extract 'full company name' with key-people, their titles and biographies etc. from 1.6 million crawled and cached websites of private companies.
- **Fuzzy Duplicate Document Identification Service** *(Java, Couchbase)* [Shingling, Vector Space Models]
  Developed full-stack solution to identify the duplicate documents in real time, given a stream of thousands of documents per day
  Impact: ***66%*** *reduction in compute time for document processing. Also, used by* ***StreetAccount*** *to find trending news.*
- **Type-Ahead and Query expansion** *(Apache Spark, Java, Python)* [Distributed Trie, LogisticRegression]
  Lead developer for implementing features like Autocomplete Query(Type Ahead) and suggest similar concepts to expand the formulated query for a 'Financial Document Search Engine'
- **Realtime Formula Ranking** *(Apache Spark, Python)* [N-gram Language models]
  Developed the pipeline to cluster users and rank the formulas in the feature of FactSet terminal
  Impact: Average rank brought down from ***5.6(ElasticSearch based)*** *to* ***2.3(Language Model based)***

ML Research Engineer, *July 2011 - July 2013*, **Tata Research Development and Design Centre**, India 2Y

- **Event Detection in Time Series** *(Java, Python, RapidMiner)* [SVM - RBF]
  Wrote an algorithm based on Shape Context for finding frequently occurring patterns and events, with as good results as SAX, DTW etc. with **7%** better results in the particular domain of car sensors.
- **Data Harmonization Framework (DHF)** *(Java, Apache Pig)*
  Implemented an ETL framework that exploits the power of map-reduce and big-databases to fuse incongruous enterprise data from disparate sources in near real time.

Skills

Languages Python • Java • C/C++ • Bash • Javascript • HTML • SQL

Frameworks PySpark • FastAPI • Metaflow • KubeFlow • TensorFlow/PyTorch • W&B • DataBricks • Django

AI Dev & Infra Cursor • V0 • MongoDB • Pinecone • Docker • Kubernetes • Terraform • Gitlab CI

Publications

Google Scholar profile

Inferring Latent Attributes of an Indian Twitter user using Celebrities and Class Influencers — ACM Hypertext 2015

Inferring gender of a Twitter user using celebrities it follows — CORR 2014

Architecture for Automated Tagging and Clustering of Song Files According to Mood — IJCSI, 2010

Education

Master of Science in Computer Science, State University of New York, Buffalo, NY — 2014

B. Tech. in Computer Science and Engineering, JIIT, India — 2010

Personal Projects / Extra Curricular

Organizer @ MUFin — Committee member, organizer and reviewer to the MUFin Workshop at top conferences, focusing on innovative approaches to modeling uncertainty in the financial sector *(AAAI2023, PKDD2022)*

Lotion — Unofficial Notion.so Desktop app for Linux *(2K+ GitHub stars / 60K+ Clones & Downloads)*

Romadeva — Tool to convert Roman script to Indic(Devanagari) script *(Used by https://translatorswithoutborders.org)*

jTextBrew — A JAVA library for fuzzy string matching, based on TextBrew algorithm by Chris Brew

Quena — Question and Answering system – Indexed 1.6 Million Wikipedia documents, designed a question parser and a ranking algorithm based on popularity. *(Apache Solr, NER, POS tagger)*

Professional Focus & Evolution