Shikha Bordia

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Professional Summary

- Machine Learning Engineer with 7+ years of experience building production-grade ML systems
- Expertise in scalable training/inference pipelines, document intelligence, retrieval-augmented generation (RAG) and evaluation of ML models
- Published 3 US patents and 7 papers (NAACL, EMNLP, SDP), with research incorporated into Microsoft GenBit, Google BIG Bench, Stanford HELM, EleutherAI's Pythia, and CVS Langfair.
- Strong background in ML system architecture, performance optimization, and cross-functional collaboration.

Skills

- ML & NLP: PyTorch, Transformers, scikit-learn, PyTorch Lightning, spaCy, MLflow, FastAPI, asyncio
- LLMs: RAG, embedding search, vector DBs, semantic search, generative evaluation
- MLOps & Infra: AWS, Docker, Git, CI/CD
- Techniques: domain adaptation, active learning, prompt optimization, evaluation design
- Other: SQL, pipeline optimization, distributed processing

Current Work

Verisk Analytics (ISO.), Aug 2019 - present, Jersey City (Machine Learning Engineer)
Natural Language Understanding/Generation, Document Classification, Information Retreival, GenAI

- **Discovery Navigator**, a leading GenAI medical record review platform (Patent Published)
  Architected and deployed scalable document classification and IE modules in production, optimized for low-resource medical data, improving recall by 20% while ensuring maintainable and testable code
  - Developed production ML pipelines for automated medical record analysis, combining domain adaptation and pipeline optimization to reduce manual review time by 90%
  - Implemented document classification and information extraction modules with limited labeled data and compute, achieving up to 90% F1 score.
  - Designed evaluation frameworks with clinical experts to systematically assess model reliability; incorporated human-in-the-loop feedback and iterative prompt optimization to improve factuality and clinical relevance.
  - Reproduced and extended transformer-based fact-aware summarization models; analyzed the effect of intermediate pretraining on extractive summarization across domains. [3]
  - Developed and validated metrics to quantify hallucinations in LLM-generated summaries
- **Concept Search** (Patent Published)
  Developed an active learning–driven concept search pipeline for unlabeled legal data that integrates fastText vector representations, attention-based sampling, and human feedback, achieving a 90% reduction in annotation effort.
- **Many-hop reasoning** (Research and Patent Published)
  Introduced a challenging dataset and the accompanying evaluation task to encourage research in many-hop fact retrieval and information verification[2]
- Received *Verisk Way to Go Award* for independently resolving a critical production failure under tight deadlines, coordinating cross-functional teams (UI, ML Ops, business) to restore full system functionality with minimal downtime..

Education

Courant Institute of Mathematical Sciences, NYU, New York, U.S.A.
MS in Computer Science • Spring 2017 - Spring 2019 • Cumulative GPA: **3.7/4.0**
Machine Learning For Language (ML[2], CILVR Lab)[4,5,6,7,8]
Advisor: Samuel Bowman, Lab Head: Yann Lecun

Indian Institute of Technology (IIT), Kharagpur, India
Bachelor in Technology, Fall 2007 - Spring 2011

Research Projects/Publications

1. Bonafide at LegalLens 2024 Shared Task: Using Lightweight DeBERTa Based Encoder For Legal Violation Detection and Resolution *(Proceedings of the Natural Legal Language Processing Workshop, 2024)* [Paper]
2. HoVer: A dataset for many-hop fact extraction and claim verification *(Findings at EMNLP, 2020)* [Paper]
3. The Effect of Pretraining on Extractive Summarization for Scientific Documents *(Proceedings of the Second Workshop on Scholarly Document Processing, 2021)* [Paper]
4. Identifying And Reducing Gender Bias In Word Level Language Models *(NAACL-SRW 2019; WiML, NeurIPS 2018)* [Slides][Paper][Poster]
5. Measuring Social Biases in Sentence Encoders *(NAACL-HLT 2019)* [Paper]
6. Do Attention Heads in BERT Track Syntactic Dependencies? *(Natural Language, Dialog and Speech (NDS) Symposium, The New York Academy of Sciences. 2019)* [Poster][Paper]
7. Investigating BERT's Knowledge of Language: Five Analysis Methods with NPIs *(EMNLP 2019)* [Paper]
8. Contributed to jiant codebase *(ML^2, CILVR Lab)*

Patents

1. Machine learning systems and methods for interactive concept searching using attention scoring (US 11550782, 2023)
2. Machine learning systems and methods for many-hop fact extraction and claim verification (US 12406150, 2025)
3. Systems and Methods for Machine Learning From Medical Records (Accepted)

Past Work Experience

Deutsche Bank (Financial Analyst, EMEA Markets, June 2011-Jan 2015, Mumbai/Bangalore)
Received fast-track promotion and firm-wide recognition for excellent client services

- Modeled Structured Finance products (CBOs, CLOs, Synthetics) leading to $2.5bn in transactions
- Built automated prototypes to perform end-to-end calculations for testing structured products and reporting
- Collaborated with technology teams for Development, UAT and Production of the product

IndustryBuying (Business Intelligence Lead, Mid-level Management, Feb 2015 -Sept 2015, Delhi)
Instrumental in startup s growth from 30 to 300+ employees and from series A to series B funding in a short span; Conceptualized the design and implementation of two crucial e-commerce infrastructure: Order Management System and Business Intelligence