Bhaskar Tripathi, Ph.D.

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Career Highlights

- Passionate technology and product leader with **15+ years** of experience building enterprise-level, data-intensive applications for Fortune 500 companies, specializing in **Machine Learning**, **Scientific Computing**, **Financial Mathematics**, **Computational Finance, Mathematical Optimization**, **Statistical Methods**, **Business Intelligence**, and **Analytics**.
- Demonstrated success in leading Product Development of Data and AI projects ranging from **$500K to $10 Million**.
- Hands-on product development and management experience in monetizing online businesses in e-commerce, search, loyalty, consumer behavior analytics, FinTech and Credit Cards, Credit Risk and Fraud.
- Proficient in agile methodologies, including estimations, planning, and execution. Have worked closely with client business and technology teams.
- Experienced in architecting secure and reliable and responsible AI solutions, managing product teams building and maintaining applications on the cloud.
- Deep expertise as a Machine Learning researcher, leading teams through the entire **ML Lifecycle**, from kickoff to production, including **MLOps/LLMOps and maintenance**, ensuring **end-to-end delivery** of ML solutions at scale including Generative AI.
- **AI Leader and Top-tier (A++) Open-Source contributor on GitHub** with nearly **7000 developer stars** and leading involvement in the AI community. GitHub Profile: GitHub**.**
- **Creator of several popular AI libraries** such as pdfGPT, text2diagram, sanitized gray wolf algorithm, pyviralcontent, TypeTruthAI Text Detector, Tripathi-Sharma sequence, Hypothesis Hub, Recurrent CEEMDAN-LSTM among many others.
- **Seasoned AI Researcher** with several top scientific contributions in published in **National Library of Medicine (US Govt)**: such as PMC10098917 and PMC9616428 as first author.
- Holder of **multiple German patents** in AI : EEG Based Algo Trading using Reinforcement Learning and Blockchain Technology. One **AI patent commercialized with USD 190K**. **US Patent**:
- **PhD** in Computational and Mathematical Finance with over 13,000 hours of grilling experience in AI research which results in several publications and patents in Quantitative Trading**.**
- **Technical Reviewer in reputed Research journals** namely: Computational Economics (Springer Nature, SCIE IF2), Finance Research Letters (Elsevier, SCIE IF 9).

Domain Specializations

- Strong hands in **Deep Learning**, **Signal Processing (Dynamical Systems)**, **Reinforcement Learning**, and **Large Language Model Tuning**, **Retrieval Augmented Generation (RAG), LoRA based parameter efficient fine tuning of LLMs** and Cloud Deployment process.
- Deep knowledge of building MLOps Processes and Pipelines on Enterprise grade large datasets.
- Strong experience in ML based SDLC: Data ingestion, modeling, pre-processing, AI Ops, and ML Pipelines in both on-premises and cloud environments.
- Deep domain expertise in **banking**, **credit cards**, **mutual funds**, **financial risk management**, and **eCommerce**.

Skillsets Summary

Category	Skills and Specializations
Machine Learning & Deep Learning	Scikit-learn, TensorFlow, PyTorch, Apache MXNet, Keras, PySpark, Google OR toolkit, convex optimization libraries, Hybrid Neural Network models (LSTM, ANN, CNN, GAN, GNN, Attention-based networks, Transformers), Structured Equation Modeling (SEM/PLS) for Qualitative models, MLFlow, expert in Data & ML pipelines, BERT/T5, OpenAI models,

	Named Entity Recognition, NLTK, LangChain, Reinforcement Learning (RL), Recurrent and Multi Agent RL & Dynamic Programming.
Cloud & CI/CD Pipelines	Azure ML, ADF, S3, GCP, Alibaba Cloud PAI studio, Aluxio, MLFlow, Kubeflow Pipelines, ClickHouse, Snowflake, CI/CD Pipelines using Git, Docker, Cron jobs, Containerization, Wandb.
Programming Languages	T-SQL, Python, PySpark, R, Latex, Spark-SQL (in Databricks)
Reporting Dashboards & Analytics	Hyperion 9.0 (Oracle BI), QlikView, Dundas Charts, Telerik Reporting, Tableau, ArcGIS – Spatial Analytics, Azure Data Factory, Confluent, Materialize, Delta Lakes (ClickHouse), Azure Data Factory, Azure SQL, Snowflake, Databricks (mosaic), Tableau, VectorDB like Pinecone, Chroma DB, FAISS.
Statistical Tools & Libraries	MATLAB R2020, Simulink, ESRI ArcGIS (Spatial Analytics), Eviews, Seaborn, Scipy.
Additional Technologies	SOLR Search, Elastic Search, MS SQL Server, Sybase IQ, Oracle, Microsoft SQL Server Analysis Services (SSAS), SSRS, Git, GitLab, Docker-container deployment, microservices in Django, Flask, Django, FastAPI.
Product Development & Consulting	Business opportunity discovery and process improvement, Full-cycle product development and strategy, Requirement analysis, implementation, and UAT, Data Engineering Practices, Cloud Consultancy, Solution development for NP-Hard problems, Data engineering-based Product Management and Quality Metrics, Global market and product experience in the United States, Canada, and Asia Pacific, including China

Career Profile

- **MultiCloud4U Technologies Pvt. Ltd,** Vice President (Data Science and Research Practices), Gurgaon (Jan 2020 to Present); Jan 2020 to Jan 2024 Part Time, Full Time employee from Feb, 2024:
  - Spearheading development of Quantitative AI solutions to optimize spending, customer retention, acquisition and enhance user experiences across products/services for McAfee.
  - Conducting A/B Tests, Hypothesis tests to check the effectiveness of marketing campaigns, working on AI-driven features for product catalog creation, inventory management, and counterfeit production detection, significantly improving conversion rates.
  - Collaborating on Gen AI evolutions and driving R&D and point solutions to lead co-innovation with Customers.
  - Improved YoY cart conversion rates by 12% and average cart order value by 7%.
  - Developed a generative AI-based foundation model (LoRA2 based fine tuning).
  - Enhanced the cognitive data capabilities on Aliexpress by developing a Retrieval Augmented Generation (RAG) for parsing Tables, pdf files, word documents to extract billing information, signatures, and other financial information on the native dataset.
  - Providing AI leadership in client-driven implementations, responsible for solving complex ML workloads, data, and refinement of AI-driven product features to ensure our solutions meet the highest standards of innovation and user satisfaction.
  - Implementing SOTA and cutting-edge MLOps practices to oversee the entire machine learning model lifecycle, ensuring superior model quality, performance, and governance while staying agile amidst evolving technological landscapes.
  - Utilizing extensive expertise in Python, SQL, and advanced ML/DL frameworks to design and execute impactful AI solutions, leading efforts to harness sophisticated statistical analyses and data insights for a decisive competitive edge.
- **Ph.D. (Computational and Mathematical Finance) | Thapar Institute of Engg. and Technology | Jan 2020 – Feb 2024**
  - Published 5 SCIE Research papers (2 in pipeline) in top scientific journals, 1 conference paper and awarded 2 international patents.
  - Maintained an active role in the AI community as a top-tier open-source contributor with nearly 7K stars on GitHub, developing popular AI libraries such as pdfGPT and text2diagram.

- o Concurrent with my Ph.D. research, I have successfully deployed several AI components to production for Aliexpress Brazil with Alibaba Cloud as part of continuous engagement in high-impact AI projects.

- **Sapient Corporation,** Technical Product Manager**,** Oct 2013 to Jan 2020
    - o Participating in RFIs, RFPs for AI Transformation deals & opportunities.
    - o Responsible for taking multi-million (>$50M) engagement from inception to production for US Retail giant Bed Bath and Beyond.
    - o Productionized a popular Algorithmic Trading platform using advanced deep learning models and automated trade strategies with the first-year revenue of 5M USD.
    - o Responsible for setting functional and business process roadmap for the clients.
    - o Responsible for end-to-end product delivery from discovery through go-live for top fortune 50 merchandise retail store chains in United States, Canada, and India.

- **Cognizant Technology Solutions (marketRx),** Technical Manager, Dec 2010 to Sep 2013
    - o Lead Technical Consultant for Geospatial Analytics and GIS
    - o Led several multi-million-dollar engagements (>5M USD) for Cognizant's flagship product - iAlign for Fortune 10 Pharma companies [https://www.cognizant.com/whitepapers/iAlign-Brochure.pdf]
    - o Mathematical modelling with ESRI-based Geospatial Analytics tools (and several open source), utilizing both basic and advanced statistics on a map-based dashboard operating on an Oracle SDE spatial data lake.
    - o Implemented Elastic Search that led to cost savings of over $800K compared to the legacy.
    - o In this role, I gained extensive experience with enterprise sales planning and analytics in the pharmaceutical industry. I worked on a variety of unique solutions, including the implementation of a comprehensive cross-selling, retention, and growth strategy for existing Pharma industry customers, both asset-based and liability-based.

- **BrickRed Technologies**, Technology Lead (Aug 2010 - Dec 2010)
    - o Created a C# based Adhoc-SQL query generation framework.

- **American Express Pvt Ltd**, System Analyst (June 2007 - August 2010)
    - o Developed Institutional Risk Management Dashboard and Enterprise Risk Management Dashboard, achieving a response time of 5 seconds when retrieving >80Million records, as an individual contributor to give an end-to-end solution.
    - o Worked on Fraud proactive and reactive fraud prevention statistical models in Python. Developed around 10 models that were instrumental in decreasing defaults by 1% at Amex worldwide Risk and Fraud operations.
    - o Developed complete stack applications in C# and other Microsoft stacks, as well as Sybase IQ, ETL, and Hyperion Cubes. I learned to work with extremely huge datasets in this role.

- **Fiserv Pvt Ltd**, System Analyst (Nov 2006 - May 2007)
    - o Worked as a Systems Analysts programmer in C#

- **Fidelity International Limited**, Analyst Programmer for (May 2005 - Aug 2006)
    - o Main developer of Fidelity Tax Advantage Fund and Fidelity Equity Fund End to End in C#/ASP.Net until it went to production.
    - o Developed Mutual Fund contribution statements for Matching grant scheme

- **HCL Technologies**, **NOIDA**, Member Technical Staff (Nov 2004 - April 2005)

Education

- **Ph.D. (Computational and Mathematical Finance):** Thapar Institute of Engg. and Technology
- **EPGDIB:** IIFT (Indian Institute of Foreign Trade), Delhi
- **B. Tech (IT):** Kurukshetra University

Patents

1. **A mind-controlled portfolio optimization and backtesting system for online trading**: (**German Patent Office**: DE202022103759.0 · **Issued Oct 13, 2022**)
   Developed an AI based product which is able read the brainwaves and identify the imagined speech and trigger Algorithmic Trading scenarios by converting the recorded brain waves to system commands using Deep Learning algorithms. The product is in process of being acquired by a German BCI Company.
2. **A blockchain and IoT based system to improve network security** (**German Patent Office**: DE202022103759.0 · **Issued Sep 29, 2022**)
   It involves determining URL patterns and using a machine learning model to verify the authenticity of requests and responses based on their data signatures.
3. **Technical Reviewer in reputed Research journals** namely: Computational Economics (Springer Nature, SCIE IF2), Finance Research Letters (Elsevier, SCIE IF 9).

Research Papers

- **Google Scholar:** https://scholar.google.com/citations?user=lT0XDl8AAAAJ&hl=en