Sundara Moorthy

Artificial Intelligence & Machine Learning

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Work Experience

Societe Generale Global Solution Centre

Distinguished Data Scientist

01/2007 - Present, Bangalore, India

- Worked with business stakeholders and translated the objectives/problems into a sound and comprehensive analytical framework through appropriate usage of statistical / AI techniques and lead cross-functional projects
- Created a robust AI architecture incorporating cutting-edge concepts and technologies. Designed and built intelligence platforms
- Formulate Data analytics, AI strategy and collaborated with IT and business teams to develop a comprehensive AI roadmap, focusing on platform selection and utilization
- Bring the organizational vision to life through the formulation and execution of both short-term and long-term AI strategies

CSS (03/2006 - 12/2006)

Programmer analyst

Prodapt (10/2005 - 03/2006)

Calsoft (05/2004 - 10/2005)

Education

Master of Computer applications

Bharathidasan University, Trichy

Jul 1999 to Apr 2002

Post graduate diploma in Bigdata analytics and optimization

International school of Engineering, Bengaluru

Mar 2017 to Dec 2017

Certifications

Certification in Quantum Computing and ML

Indian Institute of Technology, Delhi

Jul 2022 to Dec 2022

Skills

Machine Learning

- Classification, Clustering and Regression Techniques, Bagging and Boosting, Decision Trees, SVM, Naive Bayes, PCA, SVD

Artificial Intelligence

- Recommendation systems, Time Series Forecasting, Generative AI and XAI

Deep Learning

- ANN, CNN, LSTM

Text-Analytics and NLP

- Text Cleansing Methods, Topic Modelling, Sentiment Analysis, Named Entity Recognition and Transformers (Summarization, QnA)

Statistical Modeling

- Exploratory Analysis, Descriptive and Inferential Statistics, Hypothesis Testing

Explainable AI

- PDP, LIME, ACE, ICE, SHAP, What if Analysis, counterfactual and contrastive explanations, CAM

Frameworks and Libraries

- Sci-kit Learn, Pandas, NumPy, Nltk, Gensim, SpaCy, Tensorflow, Flask, T5, BERT, SS3, Finbert

Programming

- Python, SQL, R

Domain

Experience in Finance, Market Risk, PNL, Counterparty Credit Risk, Financing, Fund Valuation, Fund Accounting, referential data management in Investment banking

Honors and Recognition

Honored in "**WALL OF FAME**" for the achievements in PG program Bigdata analytics and optimization *@Insofe*.
Recognized as "**Global Expert**" in Societe Generale and received 3-week executive training in PARIS.

Research Interest

Knowledge Graphs, Explainable AI, Quantum Computing

Projects and Platforms

BRAMOS: ML platform to perform **smart reconciliations and certifications** on banking process. Has been implemented on Position, PNL, Cash, NAV, Securities and Trade reconciliations and certifications. Uses *Decision tree classification* algorithm for predictions and *NLP and vector-based models* for data quality identification in the process. Adhered to MRM *SR 11-7* guidelines. Implemented *explainability* (XAI) of the model and predictions. Approved by Deloitte(auditor) as a tool to reduce the residuals as it can backtrack the model's version used for prediction. Implemented for various business lines and processes resulting in **3 mn EUR saving** for the bank.

PRADA: Automation of **Income Attribution** certification and explanation of the PNL jumps using market sensitivities and trade positions in the portfolio managed by traders. Converging the process on trading desks across the regions there by retaining the knowledge globally on day one PNL. Implemented using *Random Forest classifier and Statistical NLG* techniques.

MERA: Anomaly detection engine to identify the **Risky Manual Entries** posted into the accounting books. Implemented domain model complemented with a fusion of ML models using *LOGIT, One- class SVM, Elliptic envelope, Isolation Forest, and Local Outlier factor* for covering the anomaly surface.

FRMDQ: Data Quality framework for identification, measuring, monitoring and improvements on Referential, Accounting and Risk process using *statistical*, Dimension based *clustering analysis and NLP NER* techniques for information retrieval to accelerate the process and bring efficiency.

MARPE: Business **Value chain monitoring** with intelligence. It predicts the portfolios valuation failures in advance using *Naïve Bayes, Hidden Markov models*. Forecast the delays on the process using *SARIMA* models. Summarization of the logs errors to accelerate the production activities using *Large Language Models* like *T5 and Genism*.

Market intelligence as a service for market risk analyst and the Front office sales/Trading desks by summarizing the articles and news related to counterparties to jump start their day using *T5 and Genism*. It also provides sentiment analysis on the news and articles on aspects like (Legal, Staff turnover, audits, controls, financials, environmental, FLS) by fine tuning *Large Language Models* like *finbert-tone, finbert-ESG, finbert-FLS*.

FRMAssist: ProductionGPT to handle production queries on SOP's and logs for Finance and Risk value chains. Summarizes the SOP's and identifies topics in the documents and error logs using *Large Language Models* like *Gensim, SpaCy, T5 and BERT*. Has the facility to perform QnA on the documents and logs using *T5*.

Consulting and Initiatives

- Data science *consultant* to various business lines within Societe Generale on Fund valuations and Accounting, Financing, Payments, transaction, Market making, Finance, RISK and Retail.
- Delivered *academic research* with Indian institute of Technology Madras on a K-Graph on relationship mining and identifying data lineages that exist between the Front to Back value chains.
- Delivered a *session to IIIT faculties and researchers* on ML and AI in Banking as part of faculty development program sponsored by AICTE.
- Conducted 6-month Data science citizen *training* program for the IT and business with a conversion rate of 60%. Delivered a *3-week in person training in PARIS* on ML and AI to business and IT partners. *Mentoring* the global data science and innovation team in Paris.
- Joint Venture to enable products with complementary AI services.
- Initiated the journey on Market risk metric (VAR) computation with *Quantum computing* using quantum simulation technique.