

# Subhadip Mitra

*Engineering Leader & AI Systems Architect*

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## Professional Summary

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Senior Engineering Leader with 15+ years of experience bridging fundamental AI research and enterprise-scale system delivery. Currently leading Google Cloud's Data & Analytics practice for Southeast Asia while driving internal innovations on LLM inference efficiency and multi-agent systems. Proven track record of operating as a "Player-Coach": managing regional engineering portfolios while simultaneously architecting and patenting novel frameworks (UPIR, ARTEMIS, FTCS, Speculative Decoding).

## Professional Experience

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**Google Cloud - Professional Services Organization: Head of Data & Analytics, Southeast Asia — Site Lead, PSO Southeast Asia**

*January 2021 – Present*

Dual-track role combining technical innovation leadership with regional delivery management. Built Google Cloud's Data Analytics practice across Southeast Asia while serving as Site Lead overseeing cross-practice operations. Member of [delta](#) - Google Cloud's innovation and transformation team architecting enterprise AI solutions at scale.

### Strategic Leadership & Delivery:

- Built Data Analytics practice for Southeast Asia from 0 to 1, recruiting and developing engineering talent while establishing the region's premier capability serving strategic enterprise clients across 6 countries.
- Serve as Site Lead overseeing delivery governance across all 7 PSO practices (Data Analytics, AI/ML, Infrastructure, Security, Enterprise Architecture, Application Development, Delivery Management) in Southeast Asia, owning utilization and CSAT metrics (97%) while driving strategic pursuits and contributing to 100% annual revenue target attainment.
- Direct \$XXM+ Data Analytics delivery portfolio across JAPAC while simultaneously overseeing \$XXM+ cross-practice portfolio as regional Site Lead.
- Led critical engagements for JAPAC strategic accounts including major financial services institutions, telcos and consumer electronics manufacturers, ensuring delivery excellence and client success.
- Partner with Sales leadership on strategic pursuits and collaborate with Product Engineering to shape platform roadmap based on field insights and customer requirements.
- Spearheaded cross-practice rescue operations for at-risk enterprise accounts with multi-million dollar project values, recovering strategic customers and converting potential platform exits into long-term partnerships.
- Delivered first-of-kind solutions including GenAI-powered reconciliation framework for a major airline (now replicated across JAPAC), large-scale ML platform migrations (30K+ notebooks), and petabyte-scale data platform modernizations.
- Partner with C-level stakeholders (CTOs, CDOs) to define data modernization and AI transformation roadmaps, translating technical capabilities into business outcomes.
- Pioneered agentic AI adoption across all 7 PSO practices (Data Analytics, AI/ML, Infrastructure, Security, Enterprise Architecture, Application Development, Delivery Management) and 6 JAPAC sub-regions, building SDKs, agent catalog, and standardized templates while designing reusable governance frameworks that accelerated innovation and reduced delivery costs.
- Built agentic tool suites including architecture discovery (100M+ node graph modeling), automated data pipeline generation, and platform cleanup agents that recovered multi-million dollar at-risk engagements and secured significant long-term cloud commitments.

- Built Data Strategy competency from 0, delivering 8-figure pursuit value across 14 strategic pitches in Asia Pacific while establishing critical data assets and new GTM offerings.

### **Technical Innovation & Research:**

- 5 Google Technical Disclosures on AI and distributed systems - UPIR (automated system synthesis, 274x speedup), FTCS (context architecture for AI agents), ARTEMIS (multi-agent debate framework), ETLC (data processing for GenAI), and LLM inference optimization (speculative decoding, custom Triton kernels).
- Industry-agnostic agentic AI for enterprise trust decisions. APLS self-learning + cascade routing achieving 86% cost reduction, sub-50ms latency. Won Google Cloud PSO Hackathon JAPAC, qualified for World Finals.

### **Standard Chartered Bank: Principal Engineer - Data & Analytics Transformation** *January 2019 – January 2021*

Led enterprise-wide AI and data platform development serving 11 markets and 1200+ global users, delivering technical excellence while influencing C-suite data strategy.

- Delivered a Self-Service ML Platform that reduced model development time from 6 months to 1 week
- Designed credit risk AI models integrating alternative data sources, improving accuracy by 15%
- Modernized MarTech infrastructure, driving 30% increase in customer acquisition

### **Think Big Analytics (a Teradata company): Principal Data Engineer / Solution Architect** *January 2017 – January 2019*

Architected enterprise-scale data solutions for Fortune 500 clients across APAC, designing scalable platforms with measurable business impact.

- Engineered 5 high-performance data lakes processing 1.2 PB/hour, achieving 20% optimization
- Built real-time fraud detection systems, reducing false positives by 60% and saving \$XM annually
- Designed enterprise architectures supporting global Fortune 500 clients across APAC

### **Various Companies: Software Engineering, Architecture and Technical Consulting Roles** *January 2010 – January 2017*

Progressively advanced through roles in software development, systems integration, and technical consulting within financial services and algorithmic trading domains.

## **Research & Open Source Engineering**

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### **Spark LLM Eval - Distributed Evaluation Framework**

Distributed LLM evaluation framework built on Apache Spark for enterprise-scale model assessment. Addresses the gap in evaluating LLMs at scale with statistical rigor, integrating seamlessly with Databricks infrastructure.

[GitHub](#) · [Blog](#)

### **CatchMe - Intelligent Trust Engine**

First of a kind, industry agnostic hybrid agentic AI decisioning system across Finance, Healthcare, Insurance, Cybersecurity, and Supply Chain. Uses adversarial debate protocols (prosecutor/defense/judge) to qualify events/anomalies and build audit trails for regulated environments.

*Google Technical Disclosures - Pending (APLS & Cascade Routing)*

### **LLM Inference Efficiency Research**

Research implementations addressing the fundamental bottleneck in LLM inference: memory-bandwidth constraints rather than compute limits. Explores acceleration through speculative decoding, custom GPU kernels, and quantization strategies.

[GitHub](#) · [GitHub](#)

*Google Technical Disclosure - Pending*

### AI Metacognition Toolkit

Activation-level detection of sandbagging, deception, and situational awareness in LLMs. Linear probes achieve 90-96% accuracy across Mistral, Gemma, and Qwen models. Includes steering vectors for runtime behavior control.

[PyPI](#) · [GitHub](#) · [Docs](#) · [Blog](#)

### Steering Vectors for Agent Behavior Control

Runtime control of LLM agent behaviors through activation steering vectors - modifying model outputs at inference time without retraining. Demonstrates more calibrated control than traditional prompting approaches with LangChain integration.

[GitHub](#) · [Blog](#)

## Publications & Technical Disclosures

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### [UPIR: Automated Synthesis and Verification of Distributed Systems](#)

*Google, Technical Disclosure Commons, November 2025*

### [ETLC: A Context-First Approach to Data Processing in the Generative AI Era](#)

*Google Cloud, May 2025*

### [Field-Theoretic Context System \(FTCS\)](#)

*Google, Technical Disclosure Commons, May 2025*

### [ARTEMIS - Adaptive Multi-agent Debate Framework](#)

*Google, Technical Disclosure Commons, January 2025*

### [Data Monetization Strategy for Enterprises](#)

*BITS Pilani, December 2023*

### [OConsent: Open Consent Protocol for Privacy and Consent Management with Blockchain](#)

*BITS Pilani, December 2021*

## Education

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**MBA, Business Analytics**

Birla Institute of Technology and Science, Pilani

**MTech, Software Systems**

Birla Institute of Technology and Science, Pilani

## Technical Skills

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**Technology Leadership & Strategy:** Enterprise Architecture, Digital Transformation, AI & Data Strategy, C-Suite Advisory, Innovation Leadership, Strategic Planning

**Data Engineering & Architecture:** Data Pipelines, Real-Time Processing, Data Mesh & Fabric, Data Governance, Apache Spark, Delta Lake, Apache Kafka, Apache Iceberg

**Generative AI & Machine Learning:** Multi-Agent Systems, Large Language Models, RAG Architecture, Vector Databases, PyTorch, LangChain, LangGraph, LlamaIndex, Google ADK, MCP, A2A Protocol, MLflow, LLMops

**Cloud Platforms & Infrastructure:** Google Cloud Platform, BigQuery, Vertex AI, Dataproc, Cloud Composer, GKE, Terraform, Kubernetes

**Programming & Development:** Python, SQL, Scala, Triton, CUDA, Algorithm Design, Formal Verification, Program Synthesis, Distributed Systems