

# Subhadip Mitra

*Engineering Leader & AI Systems Architect*

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*Last updated: January 6, 2026*

## Professional Summary

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Senior Engineering Leader with 15+ years building the teams, frameworks, and systems that turn Data and AI from research to production. Currently Head of Data & Analytics for Google Cloud in Southeast Asia - a practice built from zero, delivering enterprise Data and AI transformation across 7 countries. Dual track as "Player-Coach": leading petabyte-scale data platforms and multi-agent systems for Fortune 500 clients, while driving innovation through published research (5 technical disclosures, 6 published packages on PyPI and Maven Central, plus open-source AI safety tools including sandbagging detection and activation steering). Member of Google Cloud delta, architecting solutions at the intersection of applied AI and enterprise scale.

## 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 for Southeast Asia with delivery scope across JAPAC, while serving as Site Lead overseeing cross-practice operations in SEA. 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 regional Data Analytics delivery portfolio across JAPAC while simultaneously overseeing cross-practice portfolio as 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 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 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.

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

Led design and development of retail bank's data & analytics platform serving 11 markets, 100+ systems, and 1200+ users.

- Developed self-service ML Workbench reducing model deployment time from months to weeks
- Architected MarTech strategy driving 30% increase in customer acquisition through data-driven personalization
- Created credit risk models over 15,000+ named entities leveraging news trends and social signals, reducing potential losses by \$5M
- Defined enterprise data strategy including third-party data governance, privacy frameworks, and cloud adoption roadmap

#### **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.

- Designed 5 global data lakes with ETL pipelines handling 1.2 PB/hour and 40K daily files
- Engineered real-time platform processing 2.5M events/second, improving Ad campaign responsiveness by 80%
- Built ML fraud detection system achieving 60% fewer false positives and 25% higher detection rates, resulting in \$3M savings
- Built and managed large-scale Hadoop clusters (300+ nodes) for banks and telcos across JAPAC

#### **Microsoft, Truckaurbus (Founder), UTU: Software Engineering & Technical Leadership *January 2010 – January 2017***

Progressive advancement through software engineering, entrepreneurship, and technical leadership across systems development, marketplace platforms, and payments infrastructure.

- Microsoft (2010-2014): Windows Kernel development (Windows 7/8, Server 2012 R2), Azure ML implementations, CDN architecture optimization
- Truckaurbus (2014-2016): Founded B2B commercial vehicle marketplace - 15 cities, 25+ OEM/bank partnerships
- UTU Singapore (2016-2017): Led maiden Thailand technical development; bank integration; payment/rewards systems for merchants

## **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](#)

### 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. Published on PyPI.

[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