# Abhishek Datta

(+1) 682-256-9224 | abhi06548@yahoo.com | Linkedin: www.linkedin.com/in/abhishek06548


## TECHNICAL SKILLS

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| **Programming Language:** | Python 3.x, Java |
| **Data Engineering and Cloud Technologies:** | PySpark, Pandas, ETL/ELT pipelines, Apache Spark, Apache Airflow 2.x/3.0, AWS S3, RDS, Glue, Lambda, EMR, EKS, PostgreSQL, Snowflake, OpenSearch, Apache Hudi, Databricks, AWS-CLI |
| **Data Infra and DevOps:** | Jupyter Notebook, Kubernetes, Docker, Microservices, RESTful APIs, GitLab CI/CD, Datadog |
| **Developer tools:** | IntelliJ-IDEA, VS-Code (industrial use), Eclipse, PyCharm, VIM editor, Jira |
| **GenAI Tools & Experience:** | ChatGPT, Gemini, Copilot, Cursor, Prompt Engineering for Data Pipelines, AI-driven Data Validation |

## PROFESSIONAL EXPERIENCE

**Senior Data Engineer, Cisco Systems, Milpitas, CA, US** ***02/01/2021- Present***

***Project: AI-enhanced Radio Resource Management for Cisco DNA-Center cloud and Meraki Wireless***

AI-Enhanced RRM is an AI-driven self-optimizing RF-management cloud-services platform available on AWS, introduced as an enhancement to Cisco's existing AI-Analytics cloud and targeted for small businesses all the way to large enterprise segments universal across all heterogenous wireless networks.

- **Developed and optimized scalable ETL-pipelines** in **Pyspark/Pandas,** aggregating **multi-GB wireless RF-telemetry data** into data-frames stored in **AWS S3** for **AI/ML-driven RRM optimization**, enabling real-time closed-loop decision automation across thousands of devices.
- **Designed and implemented PostgreSQL schemas and high-performance SQL functions** on **AWS RDS,** delivering **trend-based RRM insights** and enhancing cloud dashboard visualization through **GraphQL APIs by ~40%**.
- Engineered a fully **automated CI/CD pipeline** and contributed to **DevOps infrastructure**, integrating **periodic Spark tasks** orchestrated via **Apache Airflow** for optimal, fault-tolerant **telemetry aggregation workflows with 50% latency reduction.**
- **Led core data-engineering efforts** for an enhanced AI-RRM pipeline, enabling **direct RF telemetry ingestion** from **Meraki wireless devices** at a multi-tenant scale, with **distributed deployments** and **no dependency on DNA Center appliances.**
- **Owned production monitoring and observability** for airflow pipelines**, l**everaging **Datadog** for proactive failure detection and ensuring **99.5%+ system reliability** via **Datadog dashboards** and **alerting workflows**.

**Tech stack:** Python, PySpark/Pandas, Apache Airflow, Apache Hudi, AWS Cloud Services, Jupyter Notebook, PostgreSQL, GraphQL, OpenSearch, Gitlab CI/CD, Datadog monitoring

**Software Development Engineer, Cisco Systems, San Jose, CA, US** ***07/01/2019 - 01/31/2021***

***Project: IoT Operations Center (Next Generation IoT SaaS solution) - https://us.ciscoiot.com/***

IoT operations center is a multitenant distributed microservices based architecture available on AWS with 5 9's availability. It enables management of Cisco network devices at IoT scale, thereby adhering to stringent security guidelines.

- Developed REST API specifications for device-management microservices, conducting **design-reviews obtaining cross-team approvals. Developed and automated backend REST services to dynamically manage and retrieve real-time Cisco network devices** and third-party IoT infrastructure statistics like metrics, events and audit-service logs, improving real-time data retrieval through a front-end dashboard thereby providing a unified network monitoring solution to consumers.
- Implemented **fully automated E2E functional tests using Cisco PyATS framework** ensuring error-free and robust deliverables, which improved the reliability and quality of the software.
- Deployed and integrated the device-management service using a microservices approach, running independent containers within a Kubernetes VM on AWS, enhancing the scalability and efficiency of the cloud application.

**Tech stack:** OpenAPI specification, REST services, Java Spring-boot framework, Jenkins CI/CD, Docker, Kubernetes, GitHub, PostgreSQL, PyATS automation

**Graduate Student-Worker, Distributed Systems Lab, UT Dallas TX US** ***07/01/2017 - 06/15/2019***

***Project: IoT-Sensor capabilities for Smart Agriculture System***

- Modelled a firmware based on IoT devices and sensor capabilities using **embedded Java modules interacting with MySQL database using Hibernate framework,** that provides smart agricultural solutions for a well-known farm in Dallas with an increase in decision accuracy by 90%.

  **Tech stack -** Embedded Java programming, IoT and sensors, Java Hibernate framework, MySQL database, Unix, GitHub

**Senior Software Developer, Tata Consultancy Services Limited, Kolkata, India** ***04/01/2010 - 07/31/2016***

***Telecom Client- Tele-Denmark Communications (TDC)***

- Achieved 100% customer retention and improved data latency by developing **End-user Java-based APIs using SDLC approach** for Order Service Management. Designed and implemented multiple business improvement initiatives by **building backend Java and C services on Unix** and collaborated with business clients against SLA, effecting 95% incident reduction.

## EDUCATION

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| **MS, Telecommunication Engineering** | The University of Texas at Dallas, Tx, US | **GPA: 3.8 / 4.0** | 08/2016 – 05/2018 |
| **B-Tech, Electronics and Communication** | West Bengal University of Tech, India | **GPA: 8.53/10 (3.5 / 4** | 06/2005 – 05/2009 |

## ACADEMIC PROJECTS

• **Protocol Implementation of a Fog-node Topology (October 2016)** **Course- Advanced Computer Networks**
Designed a working fog-topology network model based on distributed systems using **Multi-threading & network-programming in Java**, to provide the user with a better service quality than Cloud.

• **Designing a Social Media Web-Application (February 2018)** **Course-Web-Programming languages**
Developed a socio-academic media platform with a concept of a common university-connect portal for both faculty and students using **HTML/CSS, JQuery, PHP with AJAX** for front-end, and **MySQL** database at backend.

• **Bandwidth Customization on Demand (October 2017)** **Course- Software-defined Networking**
Implemented demand-based bandwidth customization application on a manually-devised network topology (using Mininet), using OpenvSwitches and **Python-API based RYU controller**.

## AWARDS

- Received recognition from project TME for ensuring success at Cisco Impact event for AI-enhanced RRM (October 2022) and received “You Amaze” recognition as a core-team for outstanding effort in successful AI-enhanced RRM GA launch (July 2022)
- Received academic scholarship and in-state MS tuition waiver for the year 2017-18 for academic excellence (August 2017)
- Awarded certificate of "Most valued Player" by Telecom ISU head (March 2015) and received ‘Best team award’ for collaborative team-effort to minimize defects in Telecom BSS area (February 2016)