

Bishwajit Kumar Chakraborty

AI & Backend Engineer · LLM Systems · Multi-Agent Architectures · MCP

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Summary

AI and backend-focused Software Engineer with production experience building **multi-agent LLM systems**, **MCP servers**, and **RAG pipelines**. Currently engineering secure agentic workflows at Cloudly Infotech Limited using LangChain, LangGraph, FastAPI, and FastMCP. Authored a full-stack **GitHub MCP suite** with FastMCP, pgvector RAG, Firebase auth, and a Flutter client. Currently working on ML/NLP/health analytics systems. Final-year CSE (CGPA: 3.72), all coursework complete.

Work Experience

Software Engineer Intern (AI & Backend) — Cloudly Infotech Limited

Feb 2026 – Present

Full-time · On-site, Dhaka | Clinical decision-support platform: LangGraph agents, RAG, FHIR/OpenEMR

- Engineering a production **multi-agent LLM platform** on **LangGraph** and **FastAPI**; fixed orchestrator defects misrouting queries between the Diagnostic and Treatment agents (system prompts, conditional routing nodes, core enums).
- Led a **RAG ingestion overhaul** improving retrieval quality: **heading-hierarchy breadcrumb chunking**, **table-aware atomic chunking**, list-boundary splitting, and font-size heading inference for unstructured PDFs.
- Added **hybrid vector + full-text search** over **pgvector** (Postgres `tsv` generated column, **Alembic** migrations incl. a multi-head merge); built a **MinIO/S3** ingestion pipeline with an async **aioboto3** module and a resumable, idempotent uploader CLI.
- Improved **FHIR-backed patient search** (exact full-name, title-inclusive matching) and clinical-note PDF export; authored **80+** tests across 15 modules under **ruff/black** CI gates.

Skills

LLM & Agentic AI: LangChain, LangGraph, RAG (semantic chunking, hybrid vector + lexical search), Multi-Agent Systems, Tool Calling, Prompt Engineering, Ollama, LoRA/QLoRA fine-tuning

Backend & MCP: FastAPI, Python (asyncio), FastMCP, MCP Server Design, SSE transport, REST API Design, Node.js, Express.js

Languages: Python, JavaScript, C++, Java, Dart

Data & Storage: PostgreSQL, pgvector, Postgres full-text (`tsv`), MinIO/S3 (aioboto3), chromadb, MongoDB, MySQL

Auth & Security: Firebase Auth, JWT, OAuth 2.0, Fernet encryption, RBAC, bcrypt

Frameworks & Tools: pytest, ruff/black, Docker, Alembic, SQLAlchemy, pdfplumber, reportlab, Flutter, React, Git, Linux (Arch)

Projects

GitHub MCP Suite — Full-Stack GitHub Automation with AI

FastMCP, FastAPI, pgvector, Flutter

- Built a **production-grade MCP server** (12 tools via FastMCP/SSE) for GitHub automation: repository management, GitHub Projects v2 (GraphQL), branch/PR creation, issue tracking, and **RAG-powered codebase Q&A** using pgvector for semantic code retrieval.
- Designed a **BFF API layer** (FastAPI + SQLAlchemy + Alembic + PostgreSQL) with Firebase Auth, GitHub OAuth 2.0, JWT signing, and **Fernet-encrypted token storage** for secure multi-user credential management.
- Built a cross-platform **Flutter mobile app** with Riverpod state management enabling users to interact with MCP tools and GitHub Projects from a unified interface; supports real-time agent responses via streaming.
- [github.com/Bishwajit-2810/GitHubMCPOfficial](#)

Secure Voting System — Backend API with RBAC

Node.js, Express, MongoDB, JWT, Docker

- Built a production-ready REST API for electronic voting with **JWT authentication**, **role-based access control** (voter/admin), atomic vote enforcement preventing double-voting, and bcrypt password hashing with configurable salt rounds.
- Enforced structured **Winston logging** with log rotation, comprehensive error handling middleware, Zod schema validation, and full **Docker** containerization with docker-compose for portable deployment.
- [github.com/Bishwajit-2810/VotingSystem](#)

Water Quality Monitoring System (LoRa + AI)

Node.js, MongoDB, Flutter, Gemini API

- Built an end-to-end IoT pipeline collecting pH, turbidity, TDS, and flow rate from LoRa sensors; Node.js/Express backend ingests and stores time-series readings in MongoDB with schema-validated documents and automatic threshold alerting.
- Integrated **Gemini API** for AI-driven water quality analysis and anomaly detection; model interprets multi-parameter sensor data and generates human-readable health assessments and recommendations.
- Delivered a **Flutter real-time dashboard** with live sensor feeds, historical trend charts, and push notifications for critical threshold breaches; presented to industry leadership at DIU. [\[Backend\]](#) [\[Frontend\]](#)

Local LLM Desktop Assistant with System Monitor

Python, Ollama, Tkinter

- Engineered a fully local AI assistant using **Ollama** with zero cloud dependency; modular plugin architecture allows hot-swapping of LLM backends and capability extensions without restarting the application.
- Built real-time **CPU/RAM/GPU telemetry** overlay using psutil and platform-native APIs; system metrics are streamed to the UI and optionally injected into the LLM context for hardware-aware responses.
- Integrated end-to-end **voice interaction** via STT/TTS pipelines with configurable wake-word detection; supports model switching at runtime and conversation history management. [github.com/Bishwajit-2810/Local_LLM_Project](#)

Education

B.Sc. in Computer Science & Engineering — Daffodil International University

2022 – 2026

CGPA: 3.72 · All coursework completed;

HSC, Science — Gurudayal Govt. College

2019 – 2021

GPA: 5.00 / 5.00

Certifications

- **AI+ Prompt Engineer Level 1™** — AI CERTs® (Jun 2025) **Agent X Certified** — NetCom Learning® / AI CERTs (Sep 2025)
- **5-Day AI Agents Intensive** — Google & Kaggle (Nov 2025)
- **Workshop: AI-Powered Learning Processing** — DIU NLP & ML Research Lab (Nov 2025)