MUHAMMAD TAYYAB ILYAS

AI SOLUTIONS ENGINEER | Agentic AI | LLM Evaluation | Enterprise Integration | AI Media Systems

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PROFESSIONAL SUMMARY

AI solutions engineer who designs, integrates, evaluates, and deploys production AI systems. Hands-on experience spans agentic workflows, multi-LLM evaluation, enterprise automation, real-time voice AI, MCP tools, AI media pipelines, full-stack applications, and self-hosted infrastructure. Combines engineering execution with doctoral research and 10+ years across education and technology, enabling clear translation between business needs, user workflows, and technical architecture.

CORE EXPERTISE

AI Systems and Evaluation: LLM integration, agentic workflows, multi-model routing, LLM-as-a-judge, response comparison, tool calling, structured outputs, MCP

Enterprise Integration: n8n, REST APIs, WhatsApp, email, calendar, PostgreSQL, Redis, webhooks, workflow automation, human-in-the-loop processes

AI Media and Engineering: Python, Node.js, FastAPI, React, transcription, Remotion, FFmpeg, asynchronous rendering, Dockerized media services

Delivery and Infrastructure: Requirements discovery, solution architecture, rapid prototyping, Ubuntu, Docker, Nginx, Azure, monitoring, security, deployment

PROFESSIONAL EXPERIENCE

Independent AI Solutions Engineer - LoopCodeLab and AI Product Portfolio | Barcelona, Spain | Since 2024

- Created LoopCodeLab, a self-hosted multi-agent software delivery platform where planner, worker, and reviewer agents execute isolated tasks, review code, merge changes, and ship working projects.
- Built Paco, a production WhatsApp voice assistant integrating real-time AI conversations with email, calendar, weather, web search, HTTP APIs, outbound calling, and an operations dashboard.
- Built MultiLLMChat evaluation workflows with multi-provider routing, side-by-side response comparison, automated LLM judging, retries, and performance monitoring.
- Developed Reel Room, a transcript-first AI video platform using speech recognition, transcript-to-timeline mapping, FastAPI, Remotion, FFmpeg, PostgreSQL, background rendering, and a seven-service Docker architecture.
- Published an open-source MCP server for local text-to-speech and voice cloning, and designed enterprise WhatsApp automation architecture using n8n, PostgreSQL, Redis, storage, monitoring, and secure cloud deployment.
- Operate 15+ self-hosted sites and services using Ubuntu, Nginx, Docker, PM2, systemd, TLS, databases, service health checks, and production troubleshooting.

Founder and CTO - PakEdX | Pakistan / Remote | Since 2022

- Designed and developed an AI-powered education platform that generates curriculum-aligned lesson plans, quizzes, and personalized learning content for teachers and students.
- Led end-to-end product work across user needs, feature requirements, AI workflows, full-stack implementation, deployment, and educator validation.
- Translated pedagogical requirements into product features for teacher, school-leadership, assessment, and reporting workflows.

PhD Researcher - Educational Technology - Universitat Autònoma de Barcelona (UAB) | Barcelona, Spain | Since 2022

- Research pedagogical digital competence, technology integration, and AI adoption in higher education.
- Conducted a mixed-methods study involving 127 university-teacher surveys and 32 semi-structured interviews; applied statistical and qualitative analysis to identify adoption barriers and effective practices.
- Convert research evidence into practical recommendations for AI-enabled learning products, institutional implementation, and professional development.

Education Manager and Instructional Designer - Various Educational Institutions | Pakistan | 2013 to 2022

- Progressed through teaching, instructional-design, and education-management responsibilities across public education settings.
- Supported curriculum implementation, teacher development, academic monitoring, stakeholder coordination, and technology adoption.
- Developed the domain expertise and communication skills now used to deploy AI solutions with nontechnical users.

SELECTED AI ENGINEERING PROJECTS

LoopCodeLab | Node.js, React, tmux, Git, multi-agent CLIs | loopcodelab.com
Turns plain-language requirements into planned stories, parallel agent execution, code review, Git integration, and deployable software, with model routing, bounded retries, and observable sessions.

MultiLLMChat | LLM evaluation, multi-provider orchestration, automated judging | github.com/MuhammadTayyabIlyas
Compares outputs across LLM providers through side-by-side responses and evaluator-based judging, with provider switching, error handling, retries, usage visibility, and response-performance monitoring.

Paco - WhatsApp Voice AI Assistant | Node.js, Puppeteer, WaVoIP, OpenAI Realtime API, PM2 | tayyabcheema.com/projects/paco.html
Real-time inbound and outbound voice assistant deployed on Ubuntu behind Nginx. Implements bidirectional audio resampling, WebSocket streaming, live tool calls, an HTTP control API, and an operations dashboard.

Cheema Text-to-Voice MCP Server | Python, MCP, NeuTTS, espeak-ng | tayyabcheema.com/projects/cheema-tts-mcp.html
MIT-licensed local TTS and voice-cloning server with five built-in voices, four languages, and stdio/SSE/HTTP transports; listed on mcpservers.org and compatible with Claude Desktop, Claude Code, n8n, and other MCP clients.

Reel Room | React, FastAPI, Remotion, FFmpeg, PostgreSQL, Docker | video.tayyabcheema.com
Transcript-first AI media system that maps text edits to precise video ranges and renders revised media through FastAPI, Remotion, FFmpeg, background workers, PostgreSQL, and seven Dockerized services.

TECHNICAL SKILLS

AI Systems and Evaluation: OpenAI, Anthropic and Gemini APIs, agentic workflows, LLM-as-a-judge, response comparison, multi-model routing, MCP, structured outputs, tool calling

Enterprise and Media Integration: n8n, WhatsApp, email/calendar APIs, webhooks, PostgreSQL, Redis, FastAPI, React, Remotion, FFmpeg, background processing

Engineering and Infrastructure: Python, Node.js, JavaScript, TypeScript, Docker, Linux, Ubuntu, Nginx, PM2, systemd, Cloudflare, Azure, TLS, Git/GitHub

Delivery and Analysis: Requirements discovery, solution architecture, API integration, monitoring, failure handling, Pandas, SQL, mixed methods, statistical and qualitative analysis

EDUCATION

PhD, Educational Technology - Universitat Autònoma de Barcelona (UAB) | Since 2022
MSc, Information Technology - University of Sargodha | 2015-2017
BSc, Physics and Mathematics - University of Education, Lahore

SELECTED ENGINEERING EVIDENCE

- Built evaluator-based workflows for comparing responses across multiple LLM providers.
- Integrated AI with WhatsApp, email, calendar, web search, databases, automation engines, and operational dashboards.
- Delivered AI media workflows spanning transcription, transcript editing, asynchronous rendering, and containerized video processing.
- Operate a self-hosted production fleet spanning Node.js, Python, databases, Docker workloads, TLS, monitoring, and automation pipelines.

LANGUAGES

Languages: Urdu - Native | English - Professional proficiency | Spanish - Basic (A2)