

ABDUL WAHID CHOCHAN

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CURRICULUM VITAE

PROFESSIONAL PROFILE

I am an innovative and impact-driven technology professional with a multidisciplinary foundation in Robotics, Computer Science, and Artificial Intelligence. Currently pursuing dual bachelor's degrees in Robotics & Intelligent Systems and Computer Science, I have supplemented my academic path with advanced training in Agentic AI, Cloud Computing, and Web 3.0. My expertise lies in bridging the gap between hardware engineering and intelligent software; I have a distinctive ability to build both the "body" and the "brains" of a system, from embedded robotics and autonomous machines to backend APIs and Retrieval-Augmented Generation (RAG) frameworks.

My technical fluency is backed by a commitment to open-source engineering and practical experimentation, evidenced by an active GitHub portfolio of 52 repositories. Beyond technical execution, I am a recognized leader and strategist, currently serving as the CTO at MT International and Vice President of BSRA. Whether I am acting as a Robotics & AI Ambassador or developing secure, cloud-ready web applications, I focus on combining technical depth with leadership to drive innovation in the field of intelligent systems.

EDUCATION

Bachelor of Science in Robotics and Intelligent Systems (BS RIS)

Bahria University, Karachi Campus | Expected Graduation: 2028

Bachelor of Science in Computer Science

University of the People (Online) | Expected Graduation: 2028

Comprehensive Diploma in Advanced Technologies | Expected Graduation: 2028

Focus Areas: Web 3.0, Metaverse, Artificial Intelligence, Agentic AI, Cloud Computing, DevOps, Low-Code Development

Intermediate (Pre-Engineering)

Bahria College Karsaz, Karachi

CORE TECHNICAL COMPETENCIES

Programming Languages: Python, C++, TypeScript, JavaScript, SQL, PowerShell, R, Markdown / MDX

Artificial Intelligence, Machine Learning & Agentic Systems: Generative AI, Large Language Models (LLMs), Agentic AI, OpenAI API, Gemini API, Claude API, OpenAI Agent SDK, Agent Development Kit (ADK), Retrieval-Augmented Generation (RAG), Embeddings, Semantic Search, Contextual Memory Systems, AI Workflow Automation, Predictive Modeling

Backend Development: FastAPI, RESTful APIs, Uvicorn, Async/Await Programming, Pydantic, Middleware Integration, Request / Response Modeling, Secure API Design, Async File Handling

Frontend Development: Next.js, React, TypeScript, Tailwind CSS, Radix UI, Framer Motion, Lucide React, React Hook Form, Responsive UI Development, Component-Based Architecture

Databases & Data Systems: PostgreSQL, SQLite, MongoDB, Redis, Qdrant, Neon Serverless PostgreSQL, Vector Storage, Structured / Unstructured Data Handling

Cloud, Deployment & DevOps: Vercel, Railway, Docker, Docker Compose, Environment Configuration, Deployment Automation, Containerized Application Workflows, Cloud-Ready Development Practices

Security & Authentication: JWT Authentication, Better Auth, Lucia, CORS Handling, Password Hashing (bcrypt), Rate Limiting, Secure Data Handling, Cryptographic Logic

Data, Analytics & Automation: Pandas, NumPy, Power BI, Tableau, BeautifulSoup, Scrapy, Selenium, aiohttp, httpx, requests, axios, Data Cleaning, Data Transformation, File Processing, Automation Workflows

Robotics, Embedded Systems & Hardware: Arduino Uno / Nano, Embedded Systems Development, 6-DOF Robotics, Servo Motor Control, Circuit Design, Sensor Integration, HC-05 Bluetooth Communication, Real-Time Embedded Logic, Autonomous Robotics Prototyping, SolidWorks

Development Tools: Git, GitHub, VS Code, npm, pip, requirements.txt, package.json, ESLint, pytest, Type Safety Practices

PROFESSIONAL EXPERIENCE & LEADERSHIP

Chief Technology Officer (CTO) | *MT International*

- Contributed to organizational technology strategy, digital planning, and technical execution.
- Supported the direction and improvement of digital systems, infrastructure, and operational technology workflows.
- Helped align technical initiatives with broader organizational and business objectives.

Vice President | *Bahria Society of Robotics and Aeronautics (BSRA)*

- Lead and support society operations, technical events, robotics initiatives, and collaborative engineering activities.
- Promote innovation, teamwork, and practical learning in robotics, aeronautics, and intelligent systems.
- Contribute to a stronger student technical culture through workshops, engagement, and project-based participation.

Robotics & AI Ambassador | *NUST*

January 2025 – December 2025

- Promote robotics, automation, and artificial intelligence initiatives across academic and technical communities.
- Support outreach, awareness, and engagement activities related to emerging technologies.

Class Representative | *Bahria University*

Served for 3 Semesters

- Acted as the primary liaison between students and university administration.
- Represented student concerns, coordinated communication, and demonstrated consistent leadership and responsibility.

Member, BITS – Social Affairs | *Bahria University*

October 2024 – January 2026

- Collaborate on educational, outreach, and socially impactful initiatives involving technology and student engagement.
- Support communication and coordination across institutional and student communities.

Python & AI Student Developer | *A.W.M. Technical Studio (Remote)*

January 2024 – Present

- Develop and maintain an open-source portfolio of 52 GitHub repositories across AI, robotics, automation, backend development, security, and web engineering.
- Build practical applications including FastAPI backends, TypeScript/React frontends, secure Python utilities, AI-enabled systems, and CLI applications.
- Apply modern development practices involving RAG architectures, vector databases, authentication systems, deployment workflows, and modular engineering principles.

SELECTED MASTER PROJECT PORTFOLIO

AGENTIC AI, GENERATIVE AI & INTELLIGENT SYSTEMS

Pixora | *Agentic AI / Workflow Automation*

Technologies: Python, AI agents, LLM integration

- Architecting a multi-agent AI platform designed for workflow automation, intelligent task delegation, and coordinated execution.
- Focused on structured agent collaboration and productivity enhancement.

FreelanceX | *Agentic AI / Marketplace Workflow Intelligence*

Technologies: Python, LLM APIs, Multi-Agent Architecture

- Developing an AI-powered platform for workflow automation, intelligent task routing, and freelance-oriented process orchestration.
- Applies agent-based design to improve productivity and operational flow.

AI_Employee_Vault | *AI Memory / Employee Knowledge System*

Technologies: Python, FastAPI, PostgreSQL

- Building a structured AI-oriented system for employee memory, contextual retention, and organized knowledge storage.
- Designed to support persistent intelligence and AI-assisted workflow support.

AI_Edu_Coach | *Educational AI / Personalized Learning*

Technologies: Python, LLM Integration, RAG Concepts

- Developing a generative AI platform for personalized educational support, automated coaching, and learning assistance.
- Designed to improve knowledge delivery through context-aware interactions.

Hackathon-Book-Doc | *AI Documentation / Backend Platform*

Technologies: FastAPI, Python

- Developed as a technical documentation or book-oriented platform using structured backend services.
- Demonstrates backend API development, Python web architecture, and documentation-oriented systems thinking.

Hackathon-Book-Documnetation | *Documentation / Backend Engineering*

Technologies: FastAPI, Python

- Built as a documentation-focused service project using backend API workflows and structured application logic.
- Reflects practical work in service-based documentation systems.

RAG-Enabled AI Systems | *Retrieval-Augmented Generation / Knowledge Intelligence*

Technologies: Qdrant, Embeddings, Semantic Search, FastAPI, LLM APIs

- Worked on AI systems that combine vector retrieval with generative responses to improve contextual accuracy and knowledge access.
- Applied embeddings, vector storage, and semantic search to intelligent documentation and educational use cases.

Voice-Enabled AI Experiments | *Conversational AI / Voice Systems*

Technologies: pytsx3, Speech Recognition Tools

- Explored speech-to-text and text-to-speech capabilities for AI-enabled interaction systems.
- Demonstrates experimentation with voice-based user input and output workflows.

ROBOTICS, EMBEDDED SYSTEMS & AUTONOMOUS MACHINES

6-DOF Robotic Arm | *Robotics / Embedded Control*

Technologies: Arduino, C++, HC-05 Bluetooth, Servo Control

- Engineered an articulated 6-degree-of-freedom robotic arm capable of controlled movement and pick-and-place style operations.
- Programmed motion logic in C++ and integrated Bluetooth-based wireless control.
- Designed circuit structure and power distribution for coordinated multi-servo operation.

Obstacle Avoiding Robot | *Autonomous Robotics*

Technologies: Arduino, Ultrasonic Sensors, Embedded Logic

- Built an autonomous robot capable of obstacle detection and avoidance through sensor-based feedback.
- Demonstrates real-time robotics control and autonomous system prototyping.

Soccer Robot | *Mobile Robotics / Robotics Competition*

Technologies: Arduino, Sensor Integration

- Developed a robotics prototype for competitive or educational soccer-style robotic movement.
- Applied embedded logic, real-time control, and responsive hardware behavior.

Sumo Robot | *Robotics Competition / Autonomous Strategy*

Technologies: Arduino, Embedded Systems

- Built a sumo-style robotic system focused on strategy, movement control, and autonomous interaction.
- Strengthened practical skills in embedded logic and competition-based robotics design.

Line-Following Robot | *Autonomous Navigation*

Technologies: Arduino, Sensors, Embedded Control

- Developed a robot capable of following a defined path using real-time sensor interpretation and navigation logic.
- Demonstrates autonomous movement and control-system implementation.

Robotics Documentation & Technical Knowledge Work

- Contributed to robotics-related knowledge systems, documentation, and technical concept organization.
- Reflects continuous engagement with robotics learning, technical communication, and system understanding.

FULL-STACK WEB DEVELOPMENT & FRONTEND APPLICATIONS

hekto | *E-Commerce / Full-Stack Application*

Technologies: React, Redux, TypeScript, Firebase, Tailwind CSS

- Developed a responsive furniture e-commerce application with structured frontend workflows and modern UI implementation.
- Demonstrates practical experience in state-driven interfaces and frontend architecture.

Anniation | *Frontend / Web Application*

Technologies: Next.js, React, Tailwind CSS

- Built with modern frontend tools and component-based development principles.
- Reflects experience in responsive design, React ecosystems, and modern web architecture.

Portfolio_Website_Personal- | *Personal Branding / Developer Portfolio*

Technologies: Next.js, React, Radix UI, Tailwind CSS, Framer Motion

- Developed a personal portfolio website to showcase projects, skills, and professional identity.
- Focused on clean UI structure, animation, accessibility, and polished digital presentation.

Hackathon-2 | *Web Development / Prototype Build*

Technologies: Next.js, React

- Built as part of a hackathon or rapid project development workflow.
- Demonstrates speed, adaptability, and ability to build prototypes using modern frontend frameworks.

Personal Developer Portfolio Iterations

- Designed and developed multiple personal portfolio versions using structured TypeScript and custom styling.
- Demonstrates iterative product improvement, design refinement, and self-branding.

BACKEND, API DEVELOPMENT & SYSTEMS ENGINEERING

Backend API Systems | *Backend Engineering*

Technologies: FastAPI, Python, PostgreSQL, Pydantic, Async/Await

- Built backend services for APIs, business logic, and modular software workflows.
- Applied modern asynchronous Python practices, structured validation, and API-first development.

Authentication & Protected Service Patterns | *Security / Identity Systems*

Technologies: JWT, Better Auth, Lucia, bcrypt, CORS, Rate Limiting

- Implemented token-based authentication, credential protection, access control, and backend security measures.
- Demonstrates awareness of production-minded backend protection practices.

Dockerized Application Workflows | *DevOps / Deployment*

Technologies: Docker, Docker Compose

- Applied containerization workflows for modern web and backend applications.
- Supports deployment consistency, modular packaging, and scalable development practices.

Microservice / Multi-Service Architecture Experiments

- Explored service separation, modular architectures, and scalable application patterns.
- Demonstrates interest in system design and maintainable engineering structures.

SECURITY, ENCRYPTION & UTILITY SYSTEMS

secure_data_encryption | *Security / Python Utility*

Technologies: Python, Cryptographic Logic

- Built a secure data encryption module for protecting sensitive information in software applications.
- Reflects practical interest in secure software design and data protection principles.

Configuration & Environment Management Utilities

- Applied structured environment handling using configuration objects and .env workflows.
- Supports secure, organized, and deployment-ready application setup.

COMMAND-LINE TOOLS, PRODUCTIVITY APPS & PRACTICAL SOFTWARE

AWM-ATM | *CLI Application*

Technologies: JavaScript / TypeScript

- Developed a command-line ATM-style application demonstrating logical flow, input handling, and interactive software behavior.

awm-currency-convertor | *Utility Application*

Technologies: JavaScript / TypeScript

- Built a currency conversion tool focused on practical utility logic and interactive functionality.

Todo_App | *Productivity Application*

Technologies: JavaScript / TypeScript

- Developed a task-management application supporting productivity and user-focused functionality.

Hackathon-0 | *Document / Utility / Experimental Build*

Technologies: Python, DOCX Handling

- Worked on document-related functionality and file-processing concepts using Python-based workflows.

Document Processing Projects

- Explored content extraction, file manipulation, and automation-oriented document workflows.
- Demonstrates practical development experience beyond standard web interfaces.

DATA, AUTOMATION & SCRAPING-RELATED WORK

Web Scraping & Automation Utilities

Technologies: BeautifulSoup, Scrapy, Selenium, requests, aiohttp, httpx.

- Applied tools for structured data extraction, automation tasks, and web-based information processing.
- Demonstrates understanding of automated workflows and practical data retrieval.

Data Processing & Analytics Work

Technologies: Pandas, NumPy, Power BI, Tableau

- Worked on data cleaning, transformation, analysis, and reporting-related tasks.
- Supports data-oriented problem solving and analytical thinking.

TECHNICAL PROJECT DOMAINS

Agentic AI Systems • LLM Integration • Retrieval-Augmented Generation (RAG) • Educational AI • AI Memory Systems
• Robotics & Embedded Systems • Autonomous Robotics • Full-Stack Web Development • Backend API Engineering
• Authentication & Security • Secure Software Utilities • E-Commerce Applications • Document Processing •
Developer Tools & CLI Applications • Web Scraping & Automation • Open-Source Technical Experimentation

ARCHITECTURE & DEVELOPMENT APPROACH

- API-first development
- Modular backend design
- Agent-based orchestration thinking
- Component-driven frontend architecture
- Asynchronous service workflows
- Secure-by-design software practices
- Deployment-aware engineering
- Open-source experimentation and iterative prototyping

AWARDS & HONORS

- Rising Star Award — Governor's Initiative for AI & Web 3.0 (GIAIC), 2024
- Mr. Computer Expert — Bahria College Karsaz, 2024
- College Prefect — Bahria College Karsaz, 2023 – 2024

CERTIFICATIONS & SPECIALIZATIONS

Selected from 30+ credentials

Generative AI & Machine Learning

- Build Your First Agent with Agent Development Kit (ADK) — Google Cloud (2026)
- Google AI Essentials — Google / Coursera (2024)
- Generative AI Fundamentals & Large Language Models — Google Cloud / Coursera (2024)
- Encoder-Decoder Architecture & Image Generation — Google Cloud / Coursera (2024)
- Mining Quality Prediction Using Machine & Deep Learning — Coursera Project Network (2022)
- Certified Cloud Applied Generative AI Engineer — GIAIC
- AI Fundamentals — DataCamp

Data Science & Analytics

- The Data Scientist's Toolbox — Johns Hopkins University / Coursera (2022)
- What is Data Science? — IBM / Coursera (2022)
- Data Analytics and Business Intelligence — DigiSkills (2022)
- Mastering Data Analysis with Pandas & R Programming — Coursera Project Network (2022)
- Prepare, Clean, Transform, and Load Data using Power BI — Coursera Project Network (2022)

Programming, Cloud & Professional Development

- TypeScript Variables and Data Types — Coursera Project Network (2024)
- Use AI Builder and Power Apps to Process Invoice Data — Coursera Project Network (2023)
- Google Soft Skills Program — Google / PAFLA (2024)
- Freelancing — DigiSkills (2022)

OPEN-SOURCE PROFILE

- Active GitHub contributor with 52 repositories.
- Portfolio demonstrates strong self-driven learning and practical technical development.
- Built projects across AI, robotics, full-stack web development, secure utilities, backend services, automation, and technical experimentation.
- Strongly aligned with future roles in AI Engineering, Robotics, Embedded Systems, Python Development, Backend Engineering, and Intelligent Systems.