

# MD MIHRAZ HOSSAIN NILOY

Software Engineering Undergraduate · AI/ML Researcher · Full-Stack Developer

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## PROFESSIONAL SUMMARY

Software Engineering undergraduate at Sichuan University with **published peer-reviewed AI research** (MDPI Sensors, 2026) and hands-on industry experience as a Big Data Analyst intern in Chengdu. Combines expertise in machine learning, full-stack web development, and systems programming to ship production-ready platforms — from AI-powered career tools and modern e-commerce systems to real-time quantized detection on CPU-only devices. Strong background in C++ competitive programming, edge inference, accessible design systems, and AI model optimization across PyTorch, TensorFlow, and ONNX.

## RESEARCH & PUBLICATIONS

**Exploring Artificial Intelligence in Orthopedic Surgery: A Review of Perception, Decision, and Execution Systems** 2026  
*MDPI Sensors, Vol. 26, Issue 9, Article 2591 · [mdpi.com/1424-8220/26/9/2591](https://mdpi.com/1424-8220/26/9/2591)*

Comprehensive review of 89 recent studies on AI-assisted orthopedic surgery, organized around a novel **perception–decision–execution framework**. Surveys the progression from CNN-based segmentation to transformer architectures with multi-modal fusion and uncertainty quantification, data-driven surgical planning and risk prediction, and active robotic assistance with real-time adaptive capabilities. Identifies open challenges in clinical translation and proposes closed-loop surgical assistance systems as the next research frontier.

## TECHNICAL SKILLS

**Languages:** C++ / DSA, Python, JavaScript/TypeScript, Java (OOP)

**Web:** Next.js 16, React 19, Node/Express, Tailwind CSS 4, Vite, PWA

**Design & UI:** Shadcn UI, Adobe Photoshop, Adobe Illustrator

**AI & ML:** PyTorch, TensorFlow, ONNX, OpenCV, LLMs (OpenAI, Gemini, Groq)

**Databases & Auth:** Supabase, PostgreSQL, Clerk Auth, Stripe

**Core:** Edge Inference, Systems Programming, Win32 API, WebGL/WebGPU

## EXPERIENCE

### Big Data Analyst — Intern

Mar 2026 – May 2026

*Chengdu Suncaper Data Co., Ltd. (成都上程数据有限公司) · Chengdu, China*

- Completed an on-site internship gaining hands-on industry experience in large-scale data analytics and processing pipelines.
- Collaborated with the analytics team on real-world client data workflows, exposure to ETL, data quality, and reporting practices.
- Strengthened professional skills in cross-cultural team communication (English/Chinese) within a production data engineering environment.

### Independent Research & Freelance — AI / Design / Dev

Sep 2019 – Present

*Remote (Fiverr & Independent Clients)*

- Ship AI prototypes, design systems, and developer tooling — including real-time quantized object detection on CPU-only devices.
- Built cross-brand design tokens and accessible UI libraries; ongoing work on AI/ML model optimization and edge inference pipelines.
- Delivered graphic design, web interfaces, and custom software solutions to international clients on Fiverr ([@magicprincebgb](https://magicprincebgb)).

## EDUCATION

### B.Sc. in Software Engineering

Sep 2023 – Jul 2027

*Sichuan University · Chengdu, Sichuan, China*

- Coursework:** Data Structures & Algorithms, Computer Architecture, Operating Systems, Database Systems, Software Engineering, Computer Networks, Computer Vision electives.
- Activities:** Competitive programming contests; browser ML demos using WebGL/WebGPU.

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Featured Projects · Portfolio at [magicprincebgb.tech](http://magicprincebgb.tech)

## FEATURED PROJECTS

**SkillsSynthHub — AI-Powered Career & Learning Platform** | *React 18, Vite, Tailwind CSS, Supabase, Clerk Auth, Shadcn UI, Stripe, PWA* · [skillsynthub.com](http://skillsynthub.com)

- Architected a full-stack AI career toolkit integrating **11+ AI tools** in one platform: ATS-optimized Resume Builder (6 templates), Interview Prep AI with real-time feedback, Career Roadmap Generator, Job Analyzer, AI Chat, Homework Solver, Research Assistant, Presentation Maker, AI Humanizer, Email Writer, and AI Photo Editor with background removal.
- Built complete admin dashboard with analytics, user management, feature toggling, and Stripe subscription management; PWA-ready with full SEO optimization, JSON-LD structured data, and responsive desktop/mobile design.

**HopeShop BD — Modern E-commerce Platform** | *Next.js 16 (App Router), React 19, TypeScript, Supabase, Tailwind CSS 4, PostgreSQL, PWA* · [hopeshopbd.com](http://hopeshopbd.com)

- Engineered a production-ready, high-performance e-commerce platform leveraging the latest Next.js 16 App Router and React 19 server components.
- Delivered comprehensive Admin Dashboard with real-time revenue analytics (Recharts), complex inventory management, integrated customer chat, and Clerk-based authentication.

**PartTimeBD — Part-Time & Gig Work Marketplace for Bangladesh** | *Next.js 15, TypeScript, Supabase, Tailwind CSS, PWA, Vercel* · [parttimebd.app](http://parttimebd.app)

- Built a full-stack **bilingual (English/বাংলা)** platform connecting part-time job seekers and employers with real-time in-app messaging, Leaflet map-based job location picking, status-tracked application management, and review & rating system.
- Integrated bKash/Nagad/Rocket mobile payments, email notifications via Resend, image uploads, bookmark system, and admin dashboard with analytics & moderation tools — deployed on Vercel with full PWA offline support.

**HOMIO — AI Text Humanizer & Detector** | *Next.js, TypeScript, NLP, LLMs (Groq, OpenAI, Gemini), Tailwind CSS* · [homio.magicprincebgb.tech](http://homio.magicprincebgb.tech)

- Engineered a web app that detects AI-generated content and systematically rewrites it to bypass detection algorithms, orchestrating **multiple LLM providers** (Groq, OpenAI, Gemini) while preserving original meaning and tone.

**FairShare — Group Expense Splitter** | *React, TypeScript, Vite, Supabase, React Router* · [fairshare.magicprincebgb.tech](http://fairshare.magicprincebgb.tech)

- Created a mobile-first web app for shared expense management with group creation, expense tracking, automated balance calculation, debt settlement, Supabase auth, and real-time backend data storage with responsive bottom-nav UI.

**SCU CGPA Calculator — Native Windows Desktop App** | *C++, Win32 API, GDI+* · [github.com/magicprincebgb/ScuSweCgpaCalculator](https://github.com/magicprincebgb/ScuSweCgpaCalculator)

- Developed a native Windows desktop application with a custom GUI built from scratch using Win32 API and GDI+, mapping the SCU SE curriculum to grade points on a 4.0 scale — demonstrating message loops, resource management, and high-performance custom rendering.

## LANGUAGES

**English** — Fluent    **Bengali** — Native    **Chinese** — Elementary    **Hindi** — Conversational