Timothy Utsab Bandyopadhyay

Full-Stack Developer & Researcher

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Kolkata, West Bengal

Education

- **RCC Institute of Information Technology** — Kolkata, West Bengal
  Bachelor of Technology: Computer Science Engineering (CGPA: 7.6) — *2023 – 2027*
- **St. Stephen's School** — Kolkata, West Bengal
  CISCE Board - Science (89%) — *July 2021 – Aug 2023*

Technical Skills

- **Languages**: Python (Advanced), Java (Advanced), C/C++, PHP, JavaScript, C#, Bash/Batch, HTML/CSS
- **Frameworks & Libraries**: Django, Flask, TensorFlow, Selenium, React
- **Tools & Platforms**: Linux (Ubuntu, Debian, Kali), Git, GitHub, Physical Computing
- **Core Concepts**: Computer Vision, Web Scraping, Socket Networking, Asynchronous Programming

Professional Experience

- **DiagnoEasy Healthtech** — Kolkata, India
  Live Project Intern — *Aug 2025 – Apr 2026*
  - **Production Integration**: Collaborating directly with founders to integrate a winning innovation prototype into the existing production technology stack
  - **AI-Powered Prescription Analysis**: Integrated my award-winning AI-powered prescription analysis feature into the website and Patient app, enhancing diagnostic capabilities.
  - **Nursing Assistance App**: We developed the proprietary nursing assistance app, providing comprehensive support for healthcare professionals.

Projects

- **High-Performance Media Viewer** — C++17, Qt (5/6), CMake
  - A high-performance desktop image viewer, improving rendering performance and UI responsiveness for large media files.
  - Dynamic "zoom-to-cursor", calculating viewport-anchored math, and smooth "drag-to-pan" mouse interactions.
  - **Smart Format Proxying & Caching:** Designed a fallback rendering pipeline that detects unsupported formats (HEIC, AVIF, JP2), invokes external tools asynchronously, and caches intermediate PNGs using hashing.
  - Localized environment configurations, automatically resuming application states and user settings upon load.
  - **Links:** GitHub Repository
- **StudyAlly** — React, Vite, Node.js, Firebase, Google Gemini
  AI-Powered Full-Stack Application
  - Pluggable AI provider system integrating Google Gemini 2.5 Flash with multimodal capabilities to process user-uploaded PDF documents and autonomously generate customized prediction exams and dynamic N-day study schedules.
  - Robust serverless endpoints by utilizing constrained decoding, eliminating unreliable prompt-based parsing.
  - High-quality design system with custom animations, glassmorphism UI, and mouse-tracking spotlight effects.
  - **Links:** GitHub Repository
- **Prescription Analysis Integration** — AI SDK, OCR, Node.js, MongoDB, React Native
  - Automated prescription analysis system using Generative AI, allowing patients to seamlessly upload handwritten or digital prescriptions (Images/PDFs) for instant data extraction.
  - Real-time validation algorithm cross-references AI-extracted medication names against internal pharmacy databases, streamlining inventory checks.
  - Includes a secure review dashboard enabling doctors to review AI predictions, manually override inaccuracies, and seamlessly merge corrections with system data.

– **Nursing App** TypeScript, React Native, Node.js

Proprietary Clinical Workflow Mobile Application

* Developed a proprietary clinical workflow application in TypeScript using React Native & Node.js storage.
* Integrated tightly with underlying native OS, including a splash screen while React Native itself loads.
* Used i18next for localization to adapt the application to Indian languages.
* Integrated Maps and auto-updating Geolocation services.
* Smartly generates and caches document thumbnails to optimize system usage.

– **Real-Time Job Orchestration Web App** Python, FastAPI, FFmpeg, WebSockets, xterm.js

* Manage and execute heavily parallelized video transcoding workloads.
* Live interactive frontend using xterm.js, streaming multi-terminal console output directly to the browser via WebSockets.
* Designed a concurrent backend system using Python's asyncio and winpty to spawn up to 8 concurrent Windows pseudo-terminals, enabling non-blocking execution and two-way terminal control.
* Implemented a custom WebSocket messaging protocol to efficiently multiplex log data and metadata between the server and the multi-terminal UI.

Leadership & Honors

– **Innovision 2025 (RCC Institute of Information Technology)** Kolkata

Event Lead - Capture The Flag (CTF) *2025*

* **Event Management**: Led a team to design and organize a CTF cybersecurity competition with over 200 participants.
* **Curriculum Design**: Designed challenges and technical infrastructure for the competition.

– **Honors & Awards**

Competitive Programming & Hackathons *2023 – 2024*

* **2nd Runner Up, Insignia 2K24**: Secured 3rd position in coding/aptitude event at MCKV Institute (Sep 2024).
* **Winner, Hack-o-Mania**: Ranked 1st among 50+ participants at University of Calcutta (Sep 2024).
* **Winner, Techtrix Codathon**: Secured 1st place against 100+ participants at RCCIIT (Mar 2024).
* **Winner, Innovision Codathon**: Achieved 1st place in departmental coding competition (Sep 2023).

Certifications & Languages

– **Certifications**:
NPTEL C Programming & Assembly (Top 1%, Score 82%)
NPTEL Programming In Java (Top 1%, Score 98%)