Sarthak Sidhant

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PROFILE

Aspiring Software Engineer with a passion for building complex, data-driven solutions at the intersection of **AI/ML**, **Data Science**, and **System Infrastructure**. Proven expertise in architecting advanced AI systems, exemplified by **sarthink** (a custom RAG Agentic Second Brain), and conducting high-impact data analysis, such as the ECI Voter Data Science project that exposed critical electoral roll anomalies. Possesses robust full-stack development skills, deep understanding of OSINT/Cybersecurity (SOFUSDELA audit, RedStalk), and practical system administration experience from managing a personal Proxmox-based server cluster. Seeking opportunities to apply technical leadership and a problem-solving mindset to create meaningful impact.

EDUCATION

- **Delhi Public School, Bokaro**   Bokaro Steel City, Jharkhand
  Secondary School Examination (Nursery – Std 10)   *2012 – 2024*
    - **Performance**: Consistent Academic Performance; Marks in 10th CBSE Board Exam: 92.8%

EXPERIENCE

- **JVM's SRC's School Technical Team**   Ranchi, Jharkhand
  Technical Head   *2024 - Present*
    - **Technical Leadership**: Managed and maintained technical infrastructure for major school events and assemblies, including A/V systems, lighting, and live streaming setups.
    - **Software & Support**: Provided essential IT support to school administration and staff, and developed small in-house tools for efficient event management and internal announcements.
- **CBSS - Education India**   Bokaro
  Ideation, Software & Marketing   *2023 - Present*
    - **Impact**: Developing software solutions and creating marketing campaigns to improve access to education.
- **Project Prayaas Bokaro**   Bokaro
  Outreach Lead   *2024*
    - **Community Leadership**: Led outreach efforts, coordinated volunteers, and organized events to promote the project's initiatives.

PROJECTS (PORTFOLIO)

- **sarthink (An Agentic Second Brain)**: Engineered a hyper-personal, AI-powered reasoning engine designed to function as a "second brain." The core architecture is a stateful reasoning engine built with **LangGraph**, implementing a cognitive workflow (*Diagnose → Plan → Execute*) with working memory to solve complex, subjective queries. The system uses a **Hybrid Knowledge Base** combining **ChromaDB** (Semantic Vector Memory) and **Neo4j** (Factual Graph Database) to ingest and structure all digital archives. Successfully solved complex prompt engineering challenges by developing a "Masterclass Prompt" to compel **Gemini** to generate syntactically and logically correct **Cypher** queries, demonstrating deep expertise in advanced RAG, LLM tool-routing, and data privacy-focused AI systems.
- **dpsbk.live (Student Resource Platform)**: A student-run website created to provide academic resources and notes, primarily for DPS Bokaro students, but successfully adopted by students across 26+ schools. The platform distributed **34,890+ copies of notes to 1,200+ students** and amassed 450 monthly viewers and 36,000 clicks in Q1 2024, showcasing strong Web Development (**HTML, CSS, Bootstrap**) and Community Building skills.
- **GoCattle (AI-Powered Cattle Healthcare Platform)**: Developed a comprehensive livestock health monitoring platform featured in the CBSE Science Exhibition (CRSE). The system combines three key components: **1. COW (Cattle Optimization Workstation)**: A neck-mounted hardware segment using sensors to track vital data (temp, heart rate, jaw activity) and detect early illness via **Anomaly and KNN models** (89% accuracy). **2. CV-CNN Model**: A **Convolutional Neural Network** achieved **94% accuracy** in classifying visual external diseases (e.g., FMD, LSD). **3. Web Dashboard**: Provides farmers with real-time health tracking and veterinary facilities. The platform's methodology was approved by a veteran government veterinarian, and the underlying models and research have been extended to help other aspiring developers and students. Some Adaptations of it are GauSeva, Nandini, CattleIt and others.

- **RedStalk & Prawstalk (Reddit Analysis & Social Experiment)**: Built **RedStalk**, a powerful command-line tool for deep OSINT analysis of Reddit users, featuring rich statistical reporting, **VADER sentiment analysis**, and **Gemini-powered qualitative insights**. The tool was extended into **Prawstalk**, a multithreaded and **Redis**-cached Reddit automation script used to conduct a social experiment in `r/indianteenagers`. The project's goal was to help users understand the **data privacy implications** of publicly shared information, demonstrating proficiency in OSINT, large-scale data processing, and concurrency. Soon After, Reddit Implemented Profile Privacy making Prawstalk serve its purpose.
- **Bihar S1R Dashboard**: Developed a discoverable **Streamlit/DuckDB dashboard** for transparent querying and visualization of ∼3 Crore voter records across 72 Bihar assemblies from the controversial ECI Special Intensive Revision (S1R) 2025 data. This was a direct response to data opacity, enabling public querying and data science execution via **Gemini-powered NLP-to-SQL**. The project exposed critical anomalies, including deceased voters remaining on the list and extreme house density (12% of population in houses with 40+ people), validating public allegations of mismanagement.
- **ECI Voter Data Science & Technical Analysis**: Led the technical effort to digitize and analyze ECI voter rolls, which the ECI had replaced with scanned PDFs. Developed an **OCR pipeline** (**Tesseract/PaddleOCR**) to convert images to machine-readable CSVs, implemented **fuzzy matching** (**Levenshtein distance**) for large-scale duplicate detection, and wrote an in-depth article documenting the process and findings of the voter roll investigation.
- **Personal Home Server & Sysadmin (Homelab)**: Designed, built, and maintained a high-availability personal homelab (server cluster: Ryzen 3200g, Xeon E5 2686 v4, Zimablade) to mirror production environments. Utilized **Proxmox** for virtualization (VMs and containers), self-hosts a **NAS**, media server, multiple **APIs**, and provides **infrastructure** to friends. Demonstrated **System Administration** skills by managing complex networking and successfully configured a legacy **USB printer** as a network resource via Linux/Proxmox containers.
- **s1d.me (Global Playground)**: A Python/**Flask**-based URL shortener, expanded to include a **pastebin**, **image host**, **file sharing**, and **anonymous messaging/question** platform. The project is focused on perfecting full-stack web development skills and providing essential utility tools. (Stack: Python, Flask, SQLite).
- **MCP Tools: med1 & f1n**: Developed rapid-prototype **Model Context Protocols (MCP)** tools: **med1** (Utilized advanced web scraping on Tata Img for an all-in-one medical communication tool built for a hackathon) and **f1n** (Scraped financial wave data for real-time portfolio management, stock analysis, and prediction).
- **Refurbished Laptop Deals Dashboard**: Engineered a dynamic dashboard to automate the search for the best refurbished laptop deals across multiple sites (Cashify, e-furbished). Utilizes robust **web scraping**, and integrates an **LLM** to compare complex technical specifications, evaluate device condition, and rank deals for consumer purchase recommendations.
- **klai**: Developed **klai**, a command-line tool for fast access to AI models with superior CLI formatting and user experience. Providing Granularity and Intuitive AI usage for People fascinated with the Terminal.
- **Robotics Portfolio**: A collection of hardware and embedded systems projects: **Blind Headband** (Object detection for the visually impaired, featured in CBSESE 2023), **Flipper Zero Clone** (Replicated RFID/Sub-GHz functionality using an M5Stack), and a custom **ESP32 Marauder** for Wi-Fi/Bluetooth network analysis. (Skills: Embedded Systems, C/C++, MicroPython, Sensor Integration).
- **SOFUSDELA (Data Security Audit)**: Discovered and reported a critical **data security vulnerability** in Delhi Public School's (Bokaro) digital infrastructure that exposed ∼6,000 students' sensitive documents (results, Aadhar, finance) due to a predictable endpoint and weak ERP password policy. The audit led to the implementation of mandatory password changes, CAPTCHA, and rate limiting.

WRITING & RESEARCH

- **Technical Articles & Research Papers**: Authored comprehensive articles including "**Protecting Our Digital Selves**" (Cybersecurity case study), "**The Bokaro War 1979**" (Local historical research), and "**Emacs vs VI**" (Analysis of the Editor Wars). **Currently writing an article** detailing the complete methodology, findings, and implications of the **ECI Voter Data Science Project** and S1R Dashboard.
- **Technical Tutorials**: Authored comprehensive tutorials on **Python** (basic syntax, data structures, common libraries) and **Web Development** (HTML, CSS, JavaScript fundamentals), including a series on **Command Line Interface (CLI)** usage aimed at beginners and intermediate learners.
- **Research**: Conducted technical research to calculate the **maximum weight Minecraft Steve can lift**, demonstrating skills in logical derivation and applying real-world physics to game mechanics (Theoretically, an equivalent mass to a small moon).

CERTIFICATIONS & ACHIEVEMENTS

- **Certifications**: Vanderbilt Univ. (MATLAB), Google Cloud (30 Days), HackerRank (Python Skills), Google (Git/GitHub).
- **Awards**: 2nd Position in Robotics (Interhouse, DPS Bokaro), Zonal Rank 3 in National Cyber Olympiad (NCO x2), Multiple SOF Merit Certificates.

Skills

- **Languages**: Python, HTML, CSS, JavaScript, C/C++, MicroPython, MATLAB, SQL, Cypher

- **Technologies**: Git/GitHub, **LLM Integration (Gemini/NLP)**, **RAG**, **Vector/Graph Databases (ChromaDB, Neo4j)**, **LangGraph**, LangChain/LlamaIndex, **Proxmox**, **Redis**, **Multithreading**, **Streamlit/Gradio**, **DuckDB**, Bootstrap, Discord API, ESP32 Development, Linux/OSINT Tools, **OCR (Tesseract/PaddleOCR)**

- **Domains**: Web Development, Robotics, AI/ML, Cybersecurity, Cryptography, Automation, **Data Science**, **System Administration**, **Infrastructure Management**, **Vulnerability Assessment**, **Model Context Protocols (MCP)**, Project Management, Technical Support