

Sangam Pratap Singh

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EDUCATION

ABV-Indian Institute of Information Technology and Management (IIIT), Gwalior

B.Tech in Information Technology

Aug 2023 – Aug 2027

CGPA (4th Sem): 7.45

EXPERIENCE

Software Development Intern

Jul 2025 – Sept 2025

OpenSphere

Remote

- Architected and delivered a production-ready **real-time commenting system** integrated with the **in-house text editor**, enabling **threaded discussions** for **concurrent collaborators** and eliminating reliance on third-party communication tools.
- Reengineered the complete **drafting workflow** by identifying and removing **process bottlenecks**, which minimized **manual intervention** and substantially improved **operational efficiency** across the platform.
- Optimized **task creation pipelines** through systematic workflow improvements, resulting in accelerated **client onboarding** and measurably reduced **task configuration time**, directly enhancing **customer experience**.
- Extended platform capabilities by implementing support for **self-petitioning visa workflows**, broadening **service coverage** to previously unsupported application types and enabling access to **new market segments**.
- Developed a comprehensive **user activity tracking dashboard** capturing detailed action logs across the platform, improving **operational transparency** and facilitating thorough **compliance auditing** and reporting.

PROJECTS

Astra | **GitHub** | *Electron, React.js, Node.js, Express, MongoDB, Tree-sitter, Gemini CLI*

Aug 2025 – Sep 2025

- Built a cross-platform **Electron** desktop application leveraging **React.js**, **Node.js**, and **MongoDB** to **systematically scan and analyze** codebases across multiple repositories, performing comprehensive **dependency audits** at scale.
- Integrated **OSV.dev API** with optimized **batch processing**, enabling efficient **vulnerability detection** across **source files** while intelligently filtering **non-essential directories** and honoring **.gitignore** configurations.
- Utilized **Tree-sitter parsing** combined with **Gemini CLI** for **AI-driven static analysis**, automatically generating **context-aware remediation patches** for identified security vulnerabilities.
- Designed **automated remediation workflows** by programmatically creating **feature branches from main/master**, significantly streamlining the **vulnerability resolution process** and reducing **patch deployment cycles**.

SecurePDF | **GitHub** | *Python, CustomTkinter, Cryptography's Fernet, PyMuPDF*

June 2025

- Developed an offline **DRM desktop application** featuring a polished **Tkinter-based interface**, providing secure **PDF distribution** capabilities validated by diverse test user groups.
- Implemented industry-standard **AES-256 encryption** for PDFs with **embedded authentication metadata**, incorporating email verification, unique file identifiers, MAC address binding, and **time-bound access windows**.
- Engineered a **multi-factor authentication system** for offline document access, combining **hardware binding** and **temporal validity checks** to enforce granular **access control policies**.
- Created a **custom PDF rendering engine** with disabled **print, copy, and export capabilities**, effectively preventing **unauthorized content distribution** while maintaining user experience quality.

Code Sync | **GitHub** | *React.js, MongoDB, Node.js, Socket.io, Tailwind CSS*

Feb 2025 – Mar 2025

- Engineered a **real-time collaborative code editor** with comprehensive **syntax highlighting**, intelligent tab management, and robust **concurrent editing** support for distributed development teams.
- Implemented low-latency **WebSocket-based synchronization** architecture, maintaining **document consistency** across clients with minimal **network overhead** and sub-second propagation delays.
- Built an intuitive **hierarchical file system interface** supporting dynamic file and folder operations, complemented by a carefully crafted **Monaco editor theme** for enhanced developer experience.
- Developed **real-time cursor presence indicators** with **collaborative awareness features**, providing visual feedback on collaborator positions to minimize **editing collisions** and improve team coordination.

TECHNICAL SKILLS / COURSE WORK

- Languages:** C++, C, JavaScript, Go, Python
- Tools/Technologies:** Linux, Git, GitHub, MySQL, MongoDB, Photoshop, Figma, WebSockets
- Frameworks:** React.js, Node.js, Express.js, Socket.io, Tailwind CSS, Pandas, NumPy, Streamlit, AOS
- Courses:** Data Structures, Object-Oriented Programming, Database Management Systems, Computer Networks, Operating Systems, Graph Theory, Computer Graphics

LEADERSHIP AND EXTRACURRICULAR

Core Member, Infotsav'24

Jul 2024 – Oct 2024

ABV-IIITM Gwalior

- Successfully revived the institute's flagship techno-managerial festival after a **5-year hiatus**, achieving unprecedented **1,200+ participant attendance** representing a **3x growth** over historical records.
- Directed a cross-functional design team of **12 members**, delivering **25+ professional digital assets and print collateral** that established cohesive brand identity and visual communication standards.

Front Page Designer, AASF Annual Magazine

Sep 2024 – Oct 2024

ABV-IIITM Gwalior

- Conceptualized and designed the **front cover artwork** for AASF's annual publication, reaching an audience of **800+ students and faculty members** across the institution.