

Medhansh Garg | Computer Engineering @ UIUC

[linkedin.com/in/medhansh-garg/](https://www.linkedin.com/in/medhansh-garg/) | github.com/HackOverflow404 | medhansh2005@gmail.com | +1 (217) 904-2064

Education

University of Illinois, Urbana-Champaign — BS, Computer Engineering | August 2023 - May 2027 (Expected)

- **Relevant Coursework:** Data Structures, Discrete Math, Linear Algebra, Electronics, Probability, University Physics
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Certifications

NYUx MicroBachelors Certification in Cybersecurity Fundamentals | June 2022 - April 2023

- Completed 9-course program (A grade) covering **auth/access control**, **network security**, and **penetration testing**
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Work Experience

Sigpwny — CTF & Badge Development Team | RSO for Cybersecurity at UIUC

- Working with **embedded systems** and **PCB design** to engineer DEFCON-style PCB badge featuring **ESP32** integration and SAO compatibility
- Co-designing CTF challenges for the annual UIUCTF

IoT++, Remote — Intern | June 2024 - August 2024 (15 weeks)

- Optimized **YOLO** on **Orange Pi NPU** (**13x speed**, **62% accuracy boost**) via preprocessing and **GStreamer** routing
- Deployed models using **Docker**, **Kubernetes**, and **Minikube**
- Built vehicle-routing prediction using **Random Forests** and **RNNs**; **fine-tuned image gen models**
- Helped implement **RAG-based chat tools**; presented outcomes to team leads

Athletic Court Booking System, Gurugram — Social Work | September 2022 - January 2023

- Built a full-stack court booking app (**React**, **Spring Boot**, **SQLite**) used by **300+ apartments**, reducing manual errors
 - Designed UI in **Figma** and later ported frontend to **React Native**
 - Created an admin dashboard to streamline booking and minimize conflicts
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Projects

RemoteCam — Personal Project | March 2025 – Present

- Building cross-platform webcam streaming app using **WebRTC** with **Firestore** signaling and secure code-based pairing
- Developing mobile **PWA** frontend with **Next.js**, **React**, **Tailwind CSS**, and **TypeScript** for real-time camera streaming
- Implementing Linux desktop client in **QtPython** with **GStreamer** integration for virtual webcam output

Smart LED Strip Controller — Personal Project | January 2025

- Developed **Flask web** app on **Raspberry Pi** to control LED strips via smartphone in real time
- Designed **MOSFET-based circuit** for GPIO control, reducing costs by **60%**
- Containerized app with **Docker**; integrated **ESP32** with **MQTT** for automation
- Currently adding **Matter protocol** for Alexa/Google Home interoperability

Uplift, Illinois — Hackathon Project | February 2024

- Built cross-platform **React Native** app for hackathon; designed UI in **Penpot** under time constraints
- Integrated **LangChain** + **OpenAI** for contextual chat responses; used **Tesseract.js** for OCR

Cyber Awareness Website — Personal Project | March 2024 - November 2024

- Created a responsive cybersecurity education site (**HTML**, **CSS**, **JS**)
 - Designed interactive lessons and wireframes in **Figma**
 - Explained technical topics for non-technical users
 - Scored **88/93** (performance/best practices) in **Google Lighthouse testing**
 - Link: <https://hackoverflow404.github.io/cyberawareness/>
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Research Experience

Independent Research, Shobhit University — Author | June 2022 - October 2022

- Authored research on Leet Speak's impact on password security (**834K+ samples**); published with **13 references**
 - Used **Hashcat**, **zxcvbn**, and **entropy metrics** to assess password strength and inform policy recommendations
 - Found that Leet Speak can increase password complexity, but has marginal impact on password vulnerability
 - Proposed actionable recommendations for password policies to mitigate risks
 - Published paper with **13 references**: <https://doi.org/10.32628/IJSRST229567>
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Skills

Languages: C, C++, Python, JavaScript, TypeScript, Java, SQL, HTML/CSS

Web & Frameworks: React, Next.js, Flask, Spring Boot, Tailwind CSS, Node.js

ML & Tools: TensorFlow, PyTorch, Pandas, Tesseract.js

DevOps & Systems: Docker, Kubernetes, Linux, Git, GStreamer, Firebase, WebRTC

Hardware/Embedded: ESP32, Raspberry Pi, Arduino, Qt, MQTT