

# KUSHAL PATHAK

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## SUMMARY\*

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Final-year B.Sc. in Computer Science and Information Technology (BSc. CSIT) student at Birendra Multiple Campus with a strong foundation in web development, object-oriented programming, RESTful APIs, simulation engineering, and graphics programming. I've built and deployed full-stack web applications, simulations and am expanding my skills by consistently practicing, building projects, and seeking feedback from seniors. I'm passionate about my chosen technology stacks, have the drive to meet goals, and enjoy working in a team. I've led and mentored student communities and love giving back through open-source and community projects.

## EDUCATION

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**Birendra Multiple Campus (TU)**, BSc. in Computer Science and Information Technology 2021 – Present  
**Percentage:** 76% in aggregate till date

**Relevant Coursework:** Object Oriented Programming (OOP), Data Structures and Algorithms (DSA), Operating Systems, Networking, Database Systems, Software Engineering, Calculus, Linear Algebra, Statistics, Numerical Methods, Neural Networks, Core Artificial Intelligence/Machine Learning Concepts, Physics, Computer Graphics

## PROJECTS

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### Digital Logic Simulator

- Used HTML, CSS, JavaScript, PHP, MySQL, Bootstrap
- Interactive tool for creating, connecting, and simulating logic gates in real time
- Supports cloud and local storage for saving circuits
- Allows users to clone and edit shared circuits for experimentation
- Optimized performance with a **custom hash table algorithm**, reducing baseline worst-case simulation time by **50%**.
- Includes user authentication, profile management, and circuit sharing

### Password Manager

- Used HTML, CSS, JavaScript, PHP, MySQL
- Developed a secure web app for storing and managing passwords
- Users log in with a master password to access saved credentials
- Features a simple dashboard for adding, editing, and organizing passwords
- Uses **AES-256 encryption** to keep passwords safe

### Global Chat App

- Used HTML, CSS, JavaScript, Node.js, Express, WebSocket
- Developed a real-time chat application with **WebSocket** for instant two-way messaging
- Allows multiple users to send and receive messages smoothly
- Features a lightweight and efficient server for handling connections
- Provides a simple and responsive UI for a smooth chat experience

## FREELANCING EXPERIENCE

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*Simulation Developer*

*2024 – Present*

Developed a **magnetic field simulation** to analyze ore depth using object-oriented design and technologies like HTML, CSS, JavaScript, and p5.js enabling foundational research for ore-detecting devices.

Created a **seismic wave propagation simulator** using HTML, CSS, JavaScript, and p5.js to help geologists study wave behavior and seismic activity. Improved accuracy by carefully studying wave equations..

## LEADERSHIP EXPERIENCE

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**Birendra Open Source Club**

Chitwan/Nepal

*President (2 Tenures)*

*Mar 2023 – Sep 2024*

- Organized **15+ events**, including regional hackathons and a country-level mapathon.
- Handled task allocation, role division, and conflict resolution to keep the team focused and effective.
- Oversaw resource allocation, finance management, and logistics to ensure smooth operations.
- Achieved over **45% increase in student participation** through targeted outreach and inclusive event planning.
- Mentored new members in open-source tools, promoting hands-on learning and collaboration.
- Built relationships with renowned IT professionals, fostering knowledge-sharing and collaboration.
- Maintained partnerships with other clubs, communities, and colleges for broader reach.

## CERTIFICATIONS & ACHIEVEMENTS

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### Certifications:

- CS50x – Harvard University
- Complete Web Development Bootcamp – Dr. Angela Yu
- Machine Learning Specialization – Andrew Ng
- Microsoft Office Specialist for Office PowerPoint 2013 – Microsoft

### Awards:

- Best Science Project Award – District Education Department
- Second Place, Provathon 2021 (Regional) – CSITAN Chitwan
- Best Presentation Award (+2 Level, 2018) – Gurukul College

## TECHNICAL SKILLS

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**Programming Languages:** C/C++, C#, JavaScript, Python, PHP

**Web Technologies:** HTML5, CSS3, JavaScript (ES6+), Node.js, Express

**Databases:** MySQL, MongoDB

**Graphics & Simulation:** p5.js, HTML Canvas, SFML

**Tools & Platforms:** Git, GitHub, CMake, Postman, Figma

**Capabilities:** Building Full-Stack Websites, Graphics Visualizations, and Interactive Simulations

## OTHER

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**Interests:** Creating YouTube content, developing simulations and games, analyzing the stock market, cycling, and exploring different cuisines.

**Languages:** Nepali (Native), English (Fluent)