

# Kushagra Sharma

+1 (782) 778-7070 | [ksharm22@student.ubc.ca](mailto:ksharm22@student.ubc.ca) | [linkedin.com/in/ksharma22](https://www.linkedin.com/in/ksharma22) | [github.com/itskushagraa](https://github.com/itskushagraa)

## TECHNICAL SKILLS

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**Languages:** Java, Python, C/C++, TypeScript/JavaScript, SQL  
**Frameworks/Libraries:** React, Next.js, Node.js/Express, Tailwind CSS, PyTorch, scikit-learn, Pandas, NumPy  
**Databases/Backend:** PostgreSQL, Supabase; Computer Vision (YOLOv8, YOLOPv2)  
**Cloud/Infra:** Vercel, AWS, Cloudflare, Git

## EXPERIENCE

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- Undergraduate Teaching Assistant — UBC Computer Science** Sep 2025 – Present  
*Vancouver, BC* *On-Site*
- Course: APSC160, an introductory programming class with **700+ enrolled students**.
  - Facilitate **weekly lab sessions** to reinforce programming and problem-solving concepts.
  - Grade assignments, labs, and exams with consistency and fairness
- Full-Stack Developer (Freelance) — SmitsArtStudio** Jul 2025 – Aug 2025  
*Vancouver, BC* *Remote*
- Delivered a **production-ready art gallery website** (Next.js, TS, Tailwind, Supabase) tailored for fine art sales.
  - Built a **secure email pipeline** (AWS SES) with SPF, DKIM, DMARC, domain-level authentication, rate-limiting, and bot protection using single-use Turnstile tokens.
  - Optimized performance with Vercel CDN proxy + WebP assets, reducing storage egress by ~50%.
  - Achieved a **100/100 Real Experience Score** with FCP of 1.46s and LCP of 2.51s, ensuring fast access for visitors from 20+ countries.
- Lab Assistant (Volunteer) — UBC Department of Mechanical Engineering** Feb 2023 – Apr 2023  
*Vancouver, BC* *On-Site*
- Assisted in efforts to restore a \$400,000 WAM robotic arm for human-robot collaboration research, gaining early exposure to robotics repair and lab practices.

## PROJECTS

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- Diabetic Retinopathy Screening Pipeline (Ongoing)** | *Python, PyTorch, MLflow, FastAPI* Sep 2025 – Present
- Building a deep learning pipeline for **fundus image classification** using transfer learning CNNs.
  - Incorporating model explainability and MLOps practices to ensure **scalability for clinical deployment**.
- StrayCare — Full Stack Stray Animal Welfare** | *Database design, node.js* July 2025 – Aug 2025
- Designed and **implemented a normalized relational database** (ER diagrams → BCNF → SQL schema) for tracking stray animal vaccination, feeding, and community care data.
  - Built a **Node.js backend** with REST APIs and a responsive **JavaScript/HTML/CSS frontend** to manage CRUD operations, user accounts, and community groups.
  - Handled the **frontend development**, ensuring consistent layouts and user flows within project constraints.
- FitHub** | *Java (AWT/Swing), JSON, JUnit* Sep 2024 – Dec 2024
- Built a 15,000+ LOC **fitness app** with a polished multi-screen UI, complete profile management, integrated workout/diet planning, and detailed statistics tracking, earning appreciation from the professor.
- The 4Ward Thinker** | *Raspberry Pi, IR/Ultrasonic, 3D Printing* Mar 2023
- Developed a robotic meal-serving system supporting **60 kg load** via stress analysis; built a 32.67 kg assembly with optimized cost and PLA material for low-carbon footprint.
  - Integrated ultrasonic sensors for **collision detection** and modular architecture for charging, storage, and maintenance.
- Autonomous Traffic Control System** | *Raspberry Pi, Python, YOLOPv2/YOLOv8, ML, CV* Sep 2019
- Deployed **vision-driven traffic lights**, reducing wait times by an estimated 15–20% using object/lane detection + time-series prediction.
  - Earned recognition in the **Times of India** newspaper; implemented in real-time at a Kolkata intersection.

## EDUCATION

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**University of British Columbia (UBC)** Sep 2022 – May 2027 (Tentative)  
*B.Sc. Computer Science — GPA: 4.20/4.33 (2024–25 W)*