

Pranjal Bhatia

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EDUCATION

Purdue University, College of Engineering

West Lafayette, IN

B.S. Mechanical Engineering, Computer Science Minor; GPA: 3.70/4.00 (Dean's List)

December 2028

- **Springer Engineering Business Experience Certificate:** Springer Engineering Executive Forum (ENGR 30301), Finance for Managers (FIN 20500), Venture X II
- **Milestones Certifications:** Fundamentals of Mechanical Design (**SOLIDWORKS**, CSWA track); Geometric Dimensioning and Tolerancing (GD&T); Reverse Engineering and **3D Scanning**

EXPERIENCE

Undergraduate Researcher

May 2026 – Present

Convergence Design Lab, Prof. Karthik Ramani

West Lafayette, IN

- Research **natural-language coordination protocols** for **multi-agent human-robot** environments, studying where **LLM** instruction parsing degrades and what fallback architectures are required when semantic grounding fails in unstructured space
- Work within the lab's lines on **LLM-driven adaptive feedback** for motor-skill learning, where coaching cues are compiled into evaluators over measurable kinematics, and on **human-AI collaboration for parametric CAD** and design-space exploration

Design Lead, Human Operator: Assistive Writing Device

2026 – Present

EPICS: Engineering Projects in Community Service

West Lafayette, IN

- Lead design on a handwriting-assist robot built with the Jackson Center for Conductive Education, extending an **LY Drawbot** gantry with a **servo-mounted** pen carriage, a 3-part pencil grip on two hinge points, and printed controller enclosures
- Instrumenting the grip with a **gyroscope and IMU** to capture per-student motion, then training a **local ML model** on that stream so the system learns each student's tremor profile and stroke signature rather than a generic classifier
- Architecting the system toward direct **teleoperation**: the gantry drives the student's hand through letterforms under closed-loop control, teaching the motion instead of writing for them

Co-Founder & Chief Operating Officer

Oct 2023 – Jun 2025

Alumnaut (company acquired)

Dubai, UAE

- **Led a 25-person team** across product, engineering, marketing, and operations; scaled a student-alumni mentorship platform to **5,000+ users** across 15 schools and **\$10k revenue** before the company was acquired
- Conducted **800+ user interviews** mapping the **product cycle** and its drop-off points, isolating why the first launch failed and what users came back for; rebuilt onboarding and cohort structure around the findings

PROJECTS

- **Candid — \$1,000, 1st Place JHMC Pitch** — AI user-testing platform (**Modal, Playwright, Gemini**): stress-tests a live site with **50 concurrent browser personas**, each with its own viewport, assistive-tech settings, and behavioural script; synthesises them into a ranked fix list over **axe-core** and **Lighthouse** output. Built solo at HackIllinois
- **ChYme — Most Creative Project, StarkHacks and \$400, PESC** — wearable swallow detection for Parkinson's dysphagia: designed the **TP4056/MT3608** LiPo charge and boost circuit, **I2C** wiring and dual **MPU-6050** IMU mounting, and **STM32** ring-buffer firmware streaming accelerometer data into an on-device **CNN** trained in **Edge Impulse** at **93%**
- **StayOn Specs — \$600, PESC Pitch Competition** — smart glasses running phone-distraction detection through **on-device ML**; lead product and systems engineer on a 4-person team, owning the software architecture and the weighted decision matrix behind design tradeoffs
- **cadsmith** — self-correcting **text-to-CAD agent (Python, CadQuery)**: generates CadQuery code from plain English, executes it, catches geometry and kernel exceptions, and re-prompts itself until the solid validates

AWARDS & ACTIVITIES

- **\$3,000 Industrial Roundtable Merit Scholarship:** 1 of 24 recipients from a **\$30,000** pool
- **\$750 ECON Scholars:** seminar debating rent, debt, and tax policy with practising economists
- **Purdue Squash Travelling Team: 2nd place**, Nationals in Philadelphia

TECHNICAL SKILLS

AI & Agents: Claude/GPT/Gemini APIs; MCP servers; **on-device CNN** (ChYme); **text-to-CAD agents** (cadsmith)

Software: Python, C, Java, JavaScript/TypeScript, SQL, MATLAB; React, Node.js, Flask, PostgreSQL, Git

Mechanical: SolidWorks, Fusion 360, Siemens NX (Teamcenter), GD&T, DFM/DFA, tolerance stack-up, FEA, 3D scanning, Arduino, STM32