

Arnav Bhilwariya

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SUMMARY

Software engineering student with merged open source contributions across PyTorch core infrastructure, LLM tooling, and observability platforms. Experienced building full stack systems end to end, from low level OS/driver level integration to production backend APIs, with strong fundamentals in data structures, algorithms, and systems design.

EDUCATION

National Institute of Technology, Jalandhar

2023 – 2027

B.Tech in Information Technology | CGPA: 7.2 / 10

EXPERIENCE

AD Infocom Systems

July 2025 – August 2025

Software Engineer Intern

- Automated **data preprocessing and feature engineering pipelines** using Python scripting, reducing manual overhead by ~35% and cutting ML model training setup time by ~40%
- Shipped **3+ FastAPI endpoints** for real-time ML model inference; integrated predictions into client-facing REST APIs with Git-based version control, reducing average inference latency
- Designed normalized **relational database schemas (DBMS)** and indexing strategy for the inference logging service; applied **OOP design patterns** to refactor the codebase into modular, testable components

OPEN SOURCE CONTRIBUTIONS

pytorch/torchTitan | [PR #3493](#) | *Merged*

2026

- Resolved broken CI flavor for **FSDP+TP+PP+compile** combination; unblocked distributed training test suite for core PyTorch training framework

BerriAI/litellm | [PR #29753](#) | *Merged*

2026

- Identified and patched an **authentication pipeline vulnerability** caused by a proxy SSO role mapping misconfiguration in `ui_sso.py`; eliminated silent auth bypass risk in production proxy

stanfordnlp/dspy | [PR #9908](#) | *Merged*

2026

- Refactored **inline code comments** across core DSPy modules; improved contributor onboarding clarity for Stanford's LLM programming framework

PROJECTS

CastDraw | *Tauri v2, Next.js, TypeScript, OpenCV, Media Foundation* | [Live](#)

2026

- Building a desktop app that lets users draw in the air with hand gestures and have it appear live in video calls; designed and shipped the full pipeline solo, from webcam capture to a real time pen state finite state machine with One Euro filter smoothing
- Architected a cross platform **Windows virtual camera integration** using Media Foundation/COM (`MFCreatVirtualCamera`); applied OS level driver debugging with Sysinternals DebugView to ship a stable real time video pipeline

Goal-Directed Active Vision System | *PyTorch, CLIP, IRL* | [GitHub](#)

2026

- Trained **goal-directed visual search agent** using CLIP ViT-L/14 and Inverse Reinforcement Learning on COCO-Search18 (10K+ images); achieved **97.8% vs 88.5% passive baseline** on target localization accuracy
- Engineered **active vision pipeline** with PyTorch and OpenCV: frame sampling → CLIP feature extraction → IRL-based policy learning → fixation prediction evaluation

TECHNICAL SKILLS

Languages: Python, C++, C, JavaScript, TypeScript, Java, SQL

Systems & Full Stack: Tauri, Next.js, React, Node.js, Windows Media Foundation/COM, REST API Design, FastAPI, Flask, Django

CS Fundamentals: Data Structures, Algorithms, OOP, Operating Systems, DBMS, Computer Networks

ML / AI: PyTorch, HuggingFace Transformers, Scikit-learn, TensorFlow, LightGBM, CLIP, NumPy, Pandas

Tools & Cloud: Git, GitHub, MLflow, AWS (EC2), Google Colab, Linux, OpenCV