Ashwin Ravindra Bharadwaj

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Achievements

Select Recognitions and Accomplishments

- **Founder and President, Lehi Experimental Aerospace Program (LEAP)** — Founded a new NAR chapter in Lehi, establishing a full amateur rocketry program. Organized launches, taught members how to design, build, and safely fly high-power model rockets, and served as a safety officer and certifying judge for several Level 1 (L1) launches.
- **Winner, AAAI 2025 Hackathon** — Built FakeXplainer AI, a system that generates adaptive fake news using reinforcement learning and LLMs. Achieved real-time personalization via human-in-the-loop learning and a 48-person UX study.
- **Nominated, Northeastern Student Research Award** — For Master's thesis *"Domain-Aware Decision Transformer"*, a novel autoregressive transformer architecture that models environment dynamics and domain shifts to generate domain-conditioned optimal policies.
- **Founder and Leader, Khoury Robotics Club** — Built two advanced open-source robotics platforms from scratch:
  - **Universal Wheeled Robot:** Designed and fabricated the full mechanical and electrical system; implemented SLAM using graph-based mapping and sensor fusion from depth cameras and CNN embeddings. Enabled autonomous, memory-efficient navigation through node-based environment modeling.
  - **Waltz Bipedal Robot:** Developed full mechanical design and control software. Trained walking policies in PyBullet and successfully transferred them to hardware for stable real-world locomotion.
- **Recipient, CNR Scholarship** — Awarded for academic excellence and research impact and course work.

Work Experience

Adobe Inc Oct 2025 - Present
Software develpment Engineer 3 — Python, LangChain, TypeScript, Kubernetes, Docker *Lehi, UT, USA*

Adobe Inc. Oct 2025 – Present
Software Development Engineer III Python, LangChain, TypeScript, Kubernetes, Docker *Boston, USA*

- Implemented an AI testing and evaluation framework to continuously monitor the performance, reliability, and drift of production AI agents.
- Developed a wide range of interactive UI components and animations for a high-performance web-based rendering pipeline, enabling smooth transitions and advanced visual effects.
- Spearheaded and maintained the Kubernetes-based deployment pipeline, automating environment management and building tools to proactively notify engineering teams of outages and service disruptions.

Helping Hands Lab at Northeastern University 1 Year (May 2024 – May 2025)
Research Assistant — Python, PyTorch, ML, Kubernetes, Docker *Boston, MA, USA*

- Designed and developed multiple mobile robotic platforms, including a **bipedal walking robot** and a **universal-wheeled robot** capable of transporting **50+ kg loads**.
- Implemented **autonomous navigation systems** for indoor mobility and trained **reinforcement learning policies** for stable **bipedal standing and locomotion**.
- Proposed a **multimodal transformer-based policy model** for robotic manipulation in **domain-randomized** simulated environments with varying physical parameters (e.g., friction, gravity, elasticity).
- Encoded **robot states, actions, and environment parameters** as unified token sequences for **autoregressive dynamics prediction**.
- Achieved **zero-shot policy transfer** to unseen environments without fine-tuning by leveraging **attention over domain-specific tokens**.

Cisco Systems 2.5 years (Jan 2021 – Aug 2023)
Software Engineer — Python, C++, Golang, ML, Kubernetes, Docker *Bangalore, India*

- Designed and deployed a **cloud-native CRUD system** in **Golang** that automated object management and database synchronization; replaced legacy infrastructure, boosting **DB operation throughput by 48%**.
- Automated **SSL/TLS certificate lifecycle management** using **CI/CD pipelines**, improving **encryption standards** and ensuring compliance with **secure deployment best practices**.

- Developed and enhanced existing firmware to enable servers and switches to dynamically update management ports and IPs, effectively isolating **management traffic from customer traffic** and improving **network security**.

Microsoft 6 Months (Apr 2020 – Sept 2020)

Research Intern — PyTorch, MLOps, Graph Algorithms, NLP, Computer Vision *Bangalore, India*

- Developed **machine learning models** combining **CNNs** and custom **graph algorithms** to connect historical **artworks, texts, and sculptures** in **low-data settings**.
- Proposed and implemented a **graph-based approach** to link **story characters** based on **contextual relationships** and **proximity**, boosting recognition of **rare or esoteric visual patterns**.
- Led a team of interns to develop a **ReactJS-based interactive visualization tool** for graph algorithms; deployed the platform using **GoLang** and **Python** for teaching **data structures** at **PES University**.

Skills

- **Languages:** Python, TypeScript, C++, Golang, Java
- **ML/AI:** PyTorch, LangChain, Transformers, OpenCV, Scikit-learn, JAX, BRAX, Mujoco
- **MLOps:** Docker, Kubernetes, FastAPI, CI/CD, Flask
- **Systems:** AWS(EC2, RDS), Microservices, distributed design, RTSP/MHTTP stream routing
- **Software:** SQL, ROS, MongoDB, Git, Agile, Unit Testing

Education

Northeastern University May 2025

Master of Science in Artificial Intelligence (GPA: 3.8 / 4.0) *Boston, MA*

- Teaching Assistant for "Foundations of Artificial Intelligence" for 4 consecutive semesters, supporting both theoretical and practical components.
- Founder and President of the Khoury Robotics Club, leading research-driven robotics projects and mentoring graduate members.

PES University July 2021

Bachelor of Technology in Computer Science *Bangalore, India*

- Teaching Assistant for the undergraduate course on Cloud Computing, created the assignments and auto graders.
- Collaborated with the Microsoft Innovation Lab to develop a web-based visualization platform for teaching graph algorithms to undergraduates.

Major Graduate Projects

Cloud-Based Visual Monitoring Platform— *MLOps, VLMs, RTSP, Multilingual NLP, CV, Kubernetes, Microservices, Docker*

- Built a **cloud-native platform** inspired by Cisco Intersight to stream and analyze RTSP feeds from network-connected cameras for **real-time workplace monitoring**.
- Enabled users to **interact with the Vision-Language Model (VLM)** using **natural language queries (multi-lingual)**, allowing on-the-fly customization to tasks such as detecting failed 3D prints or checking tool usage.
- Designed a **modular VLM interface API**, enabling seamless plug-and-play of third-party or proprietary VLMs into the platform; as long as a model conforms to the API, it can be deployed to analyze incoming video streams.
- Packaged core services (DB, stream router, VLM runners) into **containerized microservices**, orchestrated via **Kubernetes** and deployed on-prem for edge-based inference.
- Fine-tuned a base VLM to detect **OSHA violations**, with an auxiliary classifier mapping detections to **violation codes**; platform was demonstrated live and **successfully pitched to a VC firm**.

FakeXplainer AI— *Human-Centered AI, RL, LLMs, UX Experimentation*

- Developed an AI system that generates **adaptive fake news content** using RL and LLMs (GPT), based on user interaction history and cognitive features.
- Conducted a **48-person user study** to measure susceptibility to misinformation and adapt the model in real time.
- Won **1st Place** at AAAI 2025 Hackathon for innovation in human-in-the-loop learning and real-time behavioral adaptation.

Publications

Ashwin Bharadwaj, Anio Zhang, Rajagopla Venkat. *Shapeshifting Coloring Problems: An Interactive Tiling Assignment*. AAAI/EAAI 2025.

Anio Zhang, **Ashwin Bharadwaj** , Rajagopal Venkatesaramani. *Escape the Castle: Estimate the behaviour using MDP problem*. AAAI/EAAI 2025.

A. R. Bharadwaj, Anio Zhang, "Efficient Inverse Kinematics for High-DoF Robots: A Kolmogorov-Arnold Network Approach", Northeast Robotics Colloquium (NERC), Amhrest, USA, 2024.

A. R. Bharadwaj, S. S. Chandra, D. S. Nair, A. R. Hatim and A. Ravikumar, "Automated mythological scene recognition using machine learning and graphs", 2020 International Conference on Artificial Intelligence and Signal Processing (AISP), Amaravati, India, 2020, pp. 1-5, Jan 2020.

Ashwin R. Bharadwaj, Hardik Gourisaria, Hrishikesh Viswanath, "Video Frame Rate Doubling Using Generative Adversarial Networks", Computer Communication, Networking and IoT (ICICC 2020), Bengaluru, India, Aug. 2020