

# Ayesh Ahmad

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## Profile

Co-Founder & CTO building production AI at the intersection of efficient edge computing, industrial computer vision, and applied ML. Ships low-latency inference on embedded hardware, high-precision factory CV, LLM alignment and evaluation pipelines, and AI-driven operational intelligence—serving US and EU clients across retail, logistics, and manufacturing. Leads technical strategy, systems architecture, and end-to-end delivery from prototype to deployed product.

## Research Interests

- Efficient edge AI and hardware-aware learning: low-latency inference, constrained compute/power, deployment on accelerators and embedded hardware; brain-inspired and neuromorphic approaches when they improve efficiency under real-time constraints
- Computer vision, vision-language models (VLMs), and physical AI for industrial automation and robotics: multimodal perception, scene understanding, and closed-loop behavior on factory floors and in field-deployed robotic systems

## Experience

### Co-Founder & CTO

*Islamabad, PK**CVision**Jun 2025 – Present*

- Co-founded CVision and led AI-first automation for clients across the US and EU; built the founding engineering team and shipped MVPs and production systems generating **\$10K+ in first-month revenue**
- Led technical design and system architecture for **10+ paid client engagements and pilots** across SME operations, logistics, supply chain, and private-equity-backed businesses; owned stack selection, architecture, and model review end-to-end
- Designed and deployed applied AI for inbound/outbound automation, operational intelligence, and decision support—systems that directly enabled **\$2M+** in client-side revenue
- Architected knowledge-graph-based memory systems linking real-time and historical data for causal analysis in logistics and supply chain operations
- Scaled the company to **\$80K ARR in under 1 year**, grew the engineering team to **8 people**, standardized architecture and delivery patterns for scalable deployment under operational constraints, and operationalized AI-assisted development workflows across the organization
- Led technical vision, roadmap, and architecture for constrained, industrial, and non-cloud-first environments; drove a strategic pivot from generic AI automation to deep-tech and efficient computing aligned with deployable industrial use cases

### AI Automation & Systems Consultant

*Remote**Upwork (Freelance)**Mar 2025 – Jun 2025*

- Designed and deployed AI automation pipelines that reduced manual operational effort by up to **70%** for clients in operations and logistics
- Scoped, built, and delivered **3+** production-ready AI systems end-to-end—from discovery and architecture through deployment, documentation, and stakeholder handover
- Advised early-stage founders on AI adoption strategy, technical feasibility, and build-vs-buy decisions for live business environments

### ML, CV & SW Design Engineer

*Islamabad, PK**Cowlar Design Studio (YC W17)**Jul 2024 – Mar 2025*

- Deployed retail pricing automation on edge devices using Qualcomm Hexagon NPU for millisecond-level inference, outperforming GPU speeds

- Built a platform for automating vision applications with active learning workflows, streamlining ML data collection, annotation, and model deployment
- Automated factory operations for ViaPhoton, an Amazon-partnered fiber optics supplier, **boosting production capacity by 40x**
- Built an ML/CV system achieving **96% precision at 5 $\mu$ m alignment**, scaling monthly output from **240 to 9,600 cables**
- Enhanced the Fiber Organizer Robot using CV and ML to sort 250 $\mu$ m fibers, increasing output by **500%** (1 to 6 AWS cables/hour)
- Redesigned an action-recognition model for smart carts based on Mobile Video Networks, reaching **95% real-time edge inference accuracy**

### Prompt Engineer (Contract)

Anthropic

Remote

Jun 2024 – Oct 2024

- Designed and operated an RLHF evaluation pipeline for Claude 3.5 Sonnet and Haiku, targeting adversarial and edge-case coding tasks to stress-test model reasoning
- Produced structured preference rankings and fine-grained feedback used to improve post-training signal quality for code generation
- Led weekly calibration and failure-analysis sessions with the evaluation team, contributing to a **15% lift in coding benchmark performance**

### Deep Learning Research Intern

Optical Networks and Technologies Lab

Islamabad, PK

Jun 2023 – Sep 2023

- Implemented LSTM, GRU, and CNN models for temporal signal-processing tasks in optical-network fault prediction and performance monitoring
- Prototyped attention and transformer-based architectures for anomaly detection, improving interpretability of failure modes in optical signals
- Applied GAN-based synthetic data augmentation to mitigate data scarcity, improving model robustness under noisy real-world conditions
- Built reproducible experimentation workflows with version-controlled experiments and systematic hyperparameter search

## Research & Publications

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### Neuromorphic Intermediate Representation for T1C Hardware

Feb 2026

- **Context:** Developed an intermediate representation (IR) for compiling and deploying neural networks onto Type 1 Compute (T1C) neuromorphic hardware, with first-class support for hybrid SNN/ANN graphs that are awkward to express in prior IRs
- **Methods:** Specified IR semantics and a primitive set relative to the Neuromorphic IR (NIR) baseline; implemented a reference stack in Python and C++ with PyTorch-based authoring/export and HDF5-backed artifact exchange for reproducible model handoff
- **Contributions:** Led research and engineering from IR design through implementation; introduced additional primitives beyond NIR where needed for hybrid and hardware-specific workflows; shipped the open-source `t1c-ir` package on PyPI

Murat Isik, *Ayesh Ahmad*, Subham Das, Anurag Daram

[pypi.org/project/t1c-ir](https://pypi.org/project/t1c-ir) 

## Projects

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### Neuromorphic SDK

[type1compute.github.io](https://type1compute.github.io) 

- Developed an ecosystem for deploying SNNs onto neuromorphic hardware packaged into an SDK
- Tools Used: Python, C++, Xilinx, PyTorch, hls4ml, rustworkx, HDF5, Wasm, SpiNNaker

### Fiber Organizer & Termination Line Robot

[patents.google.com](https://patents.google.com) 

- Contributed ML/CV optimizations, cutting cable sorting cycle time from **3 minutes to 8 seconds**
- Tools Used: Python, PyTorch, OpenCV, ONNX, MLflow, Docker, FastAPI, Orange Pi 5

## Smart Cart

[gulf-times.com](#) 

- Led smart cart action recognition to **95%** real-time accuracy, deployed on Qualcomm NPU and in the cloud
- Tools Used: TensorFlow, MoViNet, MQTT, MLflow, NGINX, Docker

## Education

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### National University of Sciences and Technology (NUST)

Nov 2021 – Jun 2025

*Bachelor of Software Engineering*

- GPA: 3.21/4.0
- **Final-Year Project: CVision** – edge vision monitoring platform (evolved into the startup). Advisor: Dr. Nazia Perwaiz
- **Relevant Coursework:** Large Language Models, Reinforcement Learning, Machine Learning, Linear Algebra & ODEs, Probability & Statistics, Calculus & Analytical Geometry, Numerical Methods, Formal Methods, Discrete Mathematics, Complex Variables & Transforms, Cloud Computing, Embedded Systems, Data Structures & Algorithms, Design & Analysis of Algorithms, Database Systems, Computer Networks, Computer Architecture & Logic Design, Operating Systems, Software Project Management, Software Design & Architecture, Software Quality Engineering, Software Engineering, Engineering Economics

## Certifications

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### Supervised Machine Learning: Regression and Classification

*DeepLearning.AI*

## Awards

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**Hatch 8 Best Performance Award** (Hatch 8 incubator, National Science & Technology Park, NUST): First-place finish among **15** startups at graduation & demo day. Prize package included a cash award and dedicated office space in **Cube 8**, NSTP; Cube 8 admits roughly **1 in 400** applicant businesses.

## Leadership

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**Startup & Technical Leadership:** Co-Founder & CTO, CVision—set technical vision, architecture, and roadmap; scaled engineering team to **8**; led cross-functional delivery across high-ambiguity US/EU client engagements

**Open-Source:** Led `t1c-ir` from IR design to PyPI release (neuromorphic IR for Type 1 Compute hardware)

**University Societies:** Co-founded NUST Stray Animals Club, **General Secretary** (healthcare, fundraisers, shelter); **Event Organizer**, NUST Science Society (flagship annual science event)

**Advising & Community:** Technical advisor to founders on AI adoption (freelance); donor/volunteer for NUST animal rescue (NSAC)

**Writing & Outreach:** Technical [blog](#) ; industry/tech commentary on [Instagram](#)  and [X](#) 

## Skills

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**Languages:** Python, C/C++, Java, JavaScript/TypeScript, SQL, Shell, HTML/CSS

**ML & Optimization:** PyTorch, TensorFlow, scikit-learn, OpenCV, Hugging Face Transformers, ONNX, pandas, NumPy; quantization, pruning, knowledge distillation, active learning, on-device inference (Qualcomm Hexagon NPU/DSP), edge-to-cloud pipelines

**Infrastructure & MLOps:** Docker, Kubernetes, Linux, Git, GitHub/GitLab CI, REST APIs, GitOps pipelines; MLflow, Weights & Biases, DVC, Streamlit; AWS, GCP, Azure; MongoDB, MySQL

**Tools & Edge:** FastAPI, Flask, LangChain, OpenAI API, Azure OpenAI, MQTT, NGINX; TensorFlow Lite, Qualcomm AI Stack, ONNX Runtime, Android toolchains

**Techniques & Evaluation:** deep learning, transfer learning, object detection, action recognition, image classification, anomaly detection, RLHF/preference optimization, knowledge graphs, SNNs, GANs; benchmark-driven model comparison, hyperparameter search, experiment tracking (MLflow/W&B), dataset versioning (DVC)