Hasib Zunair

Ph.D. in Machine Learning & Artificial Intelligence
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Website LinkedIn Google Scholar GitHub

Education

- **Concordia University**, Ph.D. and MASc in Machine Learning & Artificial Intelligence — Sept. 2019 – Dec. 2024
- **North South University**, B.Sc. in Electrical & Computer Engineering — May 2013 – Dec. 2017

Work Experience

Decathlon — Montreal, Canada
Machine Learning Engineer — *Sept. 2020 – June 2024*

- Developed efficient ML algorithms, collaborated with the PM and app dev team to track objects for real-time basketball game video analysis on mobile, reducing latency by 30% and improved app engagement.
- Created a new data annotation workflow, reducing cost and time spent on annotating by 85%.
- Deployed end-to-end ML pipelines on cloud APIs and edge, by implementing model compression techniques like quantization, pruning, and knowledge distillation, reducing memory usage and inference latency.
- Trained and optimized YOLO-series object detectors to automate bike brand visibility analysis from marathon images, enhancing market penetration insights while reducing time, cost, and manual effort.
- Led development of generative AI virtual try-on algorithm as intern, using GANs, pix2pixHD and Residual U-Net, improving realism of images by 20% and enhanced online shopping experience, published in BMVC'22.
- Built semi-supervised learning algorithm as intern using EfficientNets, owned feature to train models using unlabeled data, improved accuracy by 10%, save 6× time, reduce 5× cloud resources; published in MMSports'21.
- **Tools**: Python, PyTorch, HuggingFace, OpenCV, ONNX, CoreML, FastAPI, Docker, GCP, GitHub Actions.

Concordia University — Montreal, Canada
Graduate Machine Learning Researcher — *Sept. 2019 – Dec. 2024*

- Led publications and presented at top-tier conferences (WACV, BMVC), oral presentation at BMVC'22 (top 5% acceptance rate), journals (IEEE TMI, IF: 10.6) and workshops (CVPR, ICML), resulting in 1000+ citations.
- Designed and implemented novel 2D and 3D deep learning algorithms, improving predictive accuracy, compute and data-efficiency on complex real-world challenges compared to existing state-of-the-art methods.
- Tailored computer vision models (CNNs, DINO, YOLO, U-Net), using unsupervised, self-supervised, and zero-shot learning, improving performance for image recognition, generation, object detection, and semantic segmentation.
- Mentored 15 students from undergraduate to Ph.D. level through research projects, publishing at several journals.

Ericsson — Montreal, Canada
Machine Learning Specialist — *Oct. 2021 – Mar. 2022 & Feb. 2024 – June 2024*

- Taught how to run GPT-like large language models (LLMs) and fine-tuning techniques, data science tools, and supported with pair programming, code reviews, experiments, writing tech reports, ensuring project completion.
- Assisted 21 professionals in training sequence-to-sequence models including Transformers, LSTM Autoencoders for time-series forecasting and anomaly detection using PyCaret, PyOD and Darts, improving predictive accuracy.

Skills

- **Programming Languages**: Python, Bash (Shell Scripting).
- **Tools & Libraries**: PyTorch, HuggingFace, Unsloth, TensorFlow/Keras, OpenCV, Weights & Biases, Pytest.
- **Cloud Infrastructure and MLOps**: GCP, FastAPI, Docker, Gradio, GitHub Actions, Kubernetes, RunPod.

Projects & Publications & Open-Source Contributions

- **Understand Ingredients (2025)**: Developed Afiyah, a multimodal OCR using LLM fine-tuning to extract ingredients list and query-based retrieval in a RAG-like approach to identify and retrieve explanations of harmful ingredients.
- **Chatbot for Exercise (2025)**: Built a dataset and deployed FitLensAI, a Llama 3-based vision-language model (VLM) fine-tuned using LoRA, enabling multimodal, multilingual and multi-turn conversations about fitness workouts images.
- **Unsupervised Object Localization at BMVC (2024)**: Created PEEKABOO using DINO to segment unfamiliar objects without any additional training, that is accurate, faster and lighter than competing state-of-the-art methods.
- **AICITY competition at CVPR (2022)**: Led a team for VISTA, by training Vision Transformers (ViTs) on synthetic data, to recognize and count products in videos for retail checkout to improve operational efficiency, achieving 3rd place.
- **Contributions to core ML/CV libraries with >75K GitHub stars**: Added Python code to Kornia (MS-SSIM loss), TensorFlow (3D image classification), and YOLOv6 (ONNX export fix), driving higher accessibility and usability.