Amanpreet S. Walia

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Summary

- Computer Vision Research Engineer specializing in on-device image enhancement, model optimization (SNPE/DLC, AIMET), and local LLM deployment (Ollama, llama.cpp).
- Strong research background with CVPR publications and a US patent in computational photography.

Education

M.Sc. (Thesis), Computer Science 2018 – 2021
McGill University
Thesis: Uncertainty in depth estimation using RGB-gated images GPA: **3.90**/4.00

B.Eng., Computer Engineering 2013 – 2018
York University GPA: **7.9**/9.0

Technical Skills

Languages: Python, C++, C, Java, MATLAB, SQL

Frameworks/Tools: PyTorch, Qualcomm SNPE/DLC, AIMET, LLM Deployment (Ollama, llama.cpp, GGUF), OpenCV, TensorFlow, Keras, LaTeX

Hardware: Qualcomm Snapdragon, Nvidia Jetson TX1, Huawei Atlas 200, Raspberry Pi

Experience

Computer Vision Research Engineer, Samsung Research America Dec 2022 – Present
Theme: *Efficient Models for Image Enhancement*

- Deployed image enhancement models to Qualcomm devices by converting pipelines to SNPE/DLC and resolving operator/runtime constraints for production inference.
- Built and optimized super-resolution and HDR components with a focus on on-device quality stability (artifact control, consistency across scenes) and runtime efficiency.
- Improved latency and memory footprint through deployment-oriented architecture changes and quantization workflows using AIMET.

Computer Vision Researcher, Algolux Aug 2021 – Dec 2022
Theme: *Depth Estimation from RGB & Gated Images*

- Developed a self-supervised depth estimation approach for gated imaging that improved generalization and closed the gap with prior supervised baselines under real capture conditions.

Machine Learning Engineer (Full-time Contract), Huawei Canada Mar 2021 – Aug 2021
Theme: *Model Compression for NLP on NPU*

- Ported low-rank decomposed GPT-2/CPM-style models to Huawei NPU execution constraints; validated accuracy/performance trade-offs and integration readiness.

Publications

- Amirhossein Kazerouni, Maitreya Suin, Tristan Aumentado-Armstrong, Sina Honari, **Amanpreet S. Walia**, Iqbal Mohomed, Kosta Derpanis, Babak Taati.
  Face2Scene: Using Facial Degradation as an Oracle for Diffusion-Based Scene Restoration. **CVPR 2026 (Accepted)**.
- Stefanie Walz, Mario Bijelic, Andrea Ramazzina, **Amanpreet S. Walia**, Fahim Mannan, Felix Heide.
  Gated Stereo: Joint Depth Estimation from Gated and Wide-Baseline Active Stereo Cues. **CVPR 2023**. arXiv:2305.12955.
  https://arxiv.org/abs/2305.12955
- **Amanpreet S. Walia**, Stefanie Walz, Mario Bijelic, Fahim Mannan, Fernando Julca-Aguilar, Michael Langer, Felix Heide.
  Gated2Gated: Self-Supervised Depth Estimation from Gated Images. **CVPR 2022**. arXiv:2112.02416.
  http://arxiv.org/abs/2112.02416

Patents

Dual-camera Joint Denoising-Deblurring using Burst of Short and Long Exposure Images. 2024
Inventors: Shayan Shekarforoush, **Amanpreet Singh Walia**, Aleksai Levinshtein, Konstantinos G. Derpanis, Marcus A. Brubaker
Patent Application: US20240311968A1