BISHWASH KHANAL

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EDUCATION

Master of Science in Artificial Intelligence   Aug 2024 - Present
University of Jyväskylä, Finland
Relevant Courses: Deep Learning for Cognitive Computing, Semantic Web, SOA and Cloud Computing, Computer Vision and Image Analysis, Natural Language Processing

Bachelor of Science in Electrical and Computer Engineering   Sep 2017 - Aug 2020
Jacobs University Bremen, Germany
Minor: Intelligent Mobile Systems, Grade: 1.73
Relevant Courses: Machine Learning, Computer Vision, Artificial Intelligence, Signal Processing, Robotics
Thesis: Non-Linearity in Wireless Communications and Deep Learning ↗

PUBLICATIONS

- B. Khanal, M. Om, S. Rijal, V. Ojha (2024). Alignment of a 360° image with posed color images for locally accurate texturing of 3D mesh. *Frontiers in Computer Science*, Vol. 6, ISSN: 2624-9898. doi:10.3389/fcomp.2024.1388174
- B. Khanal, S. Rijal, M. Awale, V. Ojha (2024). Structure-preserving Planar Simplification for Indoor Environments. *arXiv preprint arXiv:2408.06814*. doi:10.48550/arXiv.2408.06814
- B. Khanal, J. M. Capone (2024). Evaluating the Impact of Compression Techniques on Task-Specific Performance of Large Language Models. *arXiv preprint arXiv:2409.11233*. doi:10.48550/arXiv.2409.11233

SKILLS

Programming Languages: Python, C, C++, MATLAB, Java
Machine Learning: TensorFlow, PyTorch, Hugging Face, LLMs, Transformers, GANs, CNNs
Computer Vision: OpenCV, Open3D, TensorRT, ONNX
Tools & Technologies: Docker, Kubernetes, Git, FastAPI, LangChain, LaTeX
Databases: MySQL, PostgreSQL, ChromaDB

WORK EXPERIENCE

Research Assistant - ANSE Project   Jan 2026 - Present
University of Jyväskylä (part-time, hybrid)   Jyväskylä, Finland

- Assist in researching and designing AI-native software engineering processes
- Contribute to exploring challenges and solutions for integrating AI-generated code into industry practices
- Support experiments in real-world settings to refine AI-driven development methods
- Collaborate with cross-functional teams to establish new standards for AI-assisted software engineering
- Document and present research findings

Artificial Intelligence Engineer   Mar 2024 - Aug 2025
OptiML Org (part-time, remote)   California, USA

- Developed custom pipelines for fine-tuning and compressing open-source LLMs (Llama, Qwen, Mistral, Gemma, Phi, Deepseek), evaluating performance on domain-specific tasks
- Researched and evaluated state-of-the-art LLM compression techniques integrating model compression into fine-tuning workflows
- Founding team member focused on empowering efficient deployment of large models at scale
- **Technologies:** PyTorch, Transformers, PEFT, BitsAndBytes, Accelerate, WandB

Computer Vision Engineer   Mar 2021 - Aug 2024
E.K. Solutions Pvt. Ltd. (full-time, on-site)   Lalitpur, Nepal

- Quantized and deployed face detection, recognition, and swapping models (YOLOv8, ARCFace, Inswapper, StyleGAN2) on Jetson AGX Orin using INT8 quantization with PyTorch and TensorRT for real-time edge performance
- Developed RAG-based chatbot integrating GPT-4 for project management, database analysis, and bulk CV screening using LangChain, ChromaDB, and FastAPI
- Generated planar simplified 3D meshes for virtual tours from iPad Pro LiDAR captures, implementing custom algorithms for planar simplification, ICP registration, TSDF volumetric integration, and MVS texturing
- Applied RandLA-Net for semantic segmentation and developed full-stack pipeline using Python, C++, Swift, and Three.js
- **Technologies:** PyTorch, TensorRT, ONNX, OpenCV, Open3D, LangChain, FastAPI, Celery, NumPy

Data Annotation Specialist   Jun 2023 - Oct 2023
Scale AI (freelancing, remote)   California, USA

- Contributed to training Generative AI models by solving competitive programming problems, ranking AI-generated responses, and assessing factual accuracy of AI-produced text

Computer Vision Engineer   Apr 2023
GoThru Media Inc. (part-time, remote)   Ontario, Canada

- Automated pose estimation between uncalibrated spherical panoramas, eliminating manual alignment processes

RESEARCH PROJECTS

- **Nepali OCR using Vision Transformers**   Sep 2023
  Developed vision-based transformer model for Nepali text detection, trained RoBERTa-based tokenizer and encoder on Nepali datasets

- **Face Generator using Generative Models**   Mar 2023 - Jun 2023
  Implemented autoencoders, VAE, DCGAN, and WGAN to generate synthetic facial images using CelebA dataset with comprehensive model evaluation

- **Google ASL Fingerspelling Recognition (Kaggle)**   May 2023 - Aug 2023
  Built TensorFlow Lite model using MediaPipe Holistic for American Sign Language translation, ranking 371/1315 teams

CERTIFICATIONS

- Deep Learning Specialization, Coursera ↗
- Natural Language Processing Specialization, Coursera ↗
- Generative Adversarial Networks Specialization, Coursera ↗
- Machine Learning Operations (MLOps) Specialization, Coursera ↗