Will (Zheng) Wang, PhD

236-878-4739 | zhengwang615@outlook.com | LinkedIn | Website | Vancouver, BC, Canada

As a Senior Data Scientist and Software Architect, I have applied deep learning and modeling techniques to address challenging issues and developed products using optical imagery, radar, and Lidar data. Additionally, I have published impactful peer-reviewed papers in these domains.

EDUCATION

Newcastle University — Newcastle, UK
PhD in Radar Interferometry — 2015 - 2019
The Best Doctoral Thesis of 2019 awarded by the UK's Remote Sensing and Photogrammetry Society.

Wuhan University — Wuhan, China
Bachelor & Master of Engineering in Photogrammetry and Computer Vision — 2008 - 2015

SKILLS & EXPERTISE

Programming Languages: Python, C/C++, Matlab.

Frameworks: PyTorch, TensorFlow, Spark, OpenCV, CUDA, Lightning-Hydra-Template, Scikit-learn.

Certifications: Deep Learning, Machine Learning, AWS Fundamentals, Kubernetes, Self-Driving Cars.

Deep Learning: Sematic Segmentation, Classification, Self-supervised Learning, GAN, RL, ViT, LSTM.

Expertise: Computer Vision, Camera Calibration, Structure from Motion, Microwave Radar, LiDAR, and Optical Image Fusion, Denoising, Modelling, Anomaly Detection, Time Series Analysis, GIS, GPS, Object-oriented Design.

Others: Linux, HPC Cluster, Quobyte, Jenkins, Git.

WORK EXPERIENCE

Senior Data Scientist (Software Architect), Catalyst Earth — Markham, On — Oct 2023 - Now

- Revamped the company's InSAR technology for measuring precise Earth's surface deformation from satellite radar images. Guided the InSAR team, providing mentorship to developers and scientists, fostering excellence in programming and problem-solving mindsets. Designed a sophisticated pipeline with models to correct geometric and atmospheric errors and mitigate noises, significantly enhancing precision from the centimeter level to the millimeter level.

Scientific Developer II (MLE), 3vGeomatics Inc. — Vancouver, BC — Jul 2022 - Sep 2023

- Led the full lifecycle of self-supervised deep learning projects as an OKR team leader. Proposed an innovative random masked autoencoder approach to perform self-supervised learning (prior to Meta's masked autoencoders) for InSAR phase denoising and radar amplitude despeckling. Implemented a Mixture Density Network to efficiently learn probability distributions of residuals rather than signals, optimizing the model's learning process.
- Initiated the adoption of the lightning-hydra-template AutoML framework on a HPC cluster and automated model training with a robust multi-node and multi-GPU training pipeline. Deployed models to the company's operational environment, contributing to the creation of over 100 monthly product deliveries to contracted clients. Delivered an oral presentation on research findings derived from synthetic and real-world data at the IEEE GARSS 2023 Conference.

Data Scientist, 3vGeomatics Inc. — Vancouver, BC — Jul 2019 - Jun 2022

- Led the collaboration with the University of Alberta, applying AI techniques to address challenges in radar image analysis. Conceptualized three research projects, focusing on semantic segmentation for water/land classification and phase unwrapping, and GAN for map simulation. Published peer-reviewed journal papers from each project.
- Automated a quality control pipeline by creating ~50 anomaly detection metrics to inspect critical operational InSAR data analysis steps. Developed a global snow coverage detection tool for synthetic aperture radar data selection by leveraging open public optical imagery, resulting in a 15% reduction in the company's commercial data costs.

Independent Software Developer, GRInS Software (Startup) — Newcastle, UK — Dec 2018 - Jun 2019

- Designed and developed a comprehensive ground-based radar interferometric processing desktop software system. Implemented core modules with CUDA C++ and GUI with QT. Sold three licenses to end users, showcasing effective sales skills and client relationship management.

Machine Vision Software Engineer, ZG Technology — Wuhan, China — Mar 2014 - Jun 2015

- Modelled camera intrinsic parameters with EXIF focal length and focus distance. Developed a pipeline of rending LiDAR point cloud with zoom-lens photos. Explained why consumer-grade zoom-lens cameras cannot guarantee a positioning precision of 1:10,000.