Yang Mu

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Education

ETH Zurich (ETH), Zurich, Switzerland — Sep. 2021 - Jun. 2022
M.Sc. in Geomatics (SEMP Exchange Program), **Current GPA: 5.9/6.0**
Main Courses: Image Interpretation (6.0), Signal Processing, Modeling, Inversion (6.0), Introduction to Scientific Computation (6.0), Photogrammetry and 3D Vision Lab (5.75), etc

KTH Royal Institute of Technology (KTH), Stockholm, Sweden — Aug. 2020 - Jun. 2022
M.Sc. in Geoinformation, **GPA: 4.8/5.0 (Rank: 1st/25)**
Main Courses: Deep Learning in Data Science (5.0), Geovisualisation (5.0), Spatial Analysis (5.0), Spatial Database (5.0), GIS Architecture and Algorithms (5.0), Machine Learning (4.5), etc

Wuhan University (WHU), Wuhan, China — Sep. 2016 - Jun. 2020
B.Eng. in Remote Sensing, **GPA: 86/100 (Top 30%)**
Main Courses: Digital Image Processing Course Practice (100), Laser Remote Sensing (92), Modern Photogrammetry (91), Error Processing of Spatial Data (91), etc

Research Experience

Crop Types Prediction with Temporal Convolutional Network<Report> — Nov. - Dec. 2021
Group leader, *Advisor: Dr. Mehmet Özgür Türkoglu, Prof. Dr. Konrad Schindler, ETH*
- Conducted the training of TCN on Sentinel-2 data with 71 temporal length
- Adopted residual blocks in TCN and class-balanced sample weights in loss function
- Performed prediction of 13 crop types with 81.91% test accuracy

Canopy Height Estimation Based on Deep Learning<Report> — Oct. - Nov. 2021
Group leader, *Advisor: Dr. Mikhail Usvyatsov, Prof. Dr. Konrad Schindler, ETH*
- Performed feature extraction with Deeplabv3-ResNet101 and ResNet-101 on Sentinel-2 images
- Collaborated to train SGD of Ridge Regression and XGBoost over different features combinations
- Obtained 8.81 m RMSE on test data in canopy height estimation

Image Semantic Segmentation over Indonesia Regions<Report> — Sept. - Oct. 2021
Group leader, *Advisor: Dr. Torben Peters, Prof. Dr. Konrad Schindler, ETH*
- Conducted feature extraction at spectral and texture level manually on Sentinel-2 images
- Applied incremental learning to train SVM, logistic regression, XGBoost and Naive Bayes
- Achieved 94.3% test accuracy in background and 88% in cloud segementation

Land Use Analysis of Wuhan Based on Deep Learning<Code> — Feb. – May. 2020
Project leader, *Advisor: Prof. Dr. Shugen Wang, WHU*
- Conducted transfer learning of AlexNet, VGG11, ResNet-50 and ResNet-101 on annotated remote sensing images of Wuhan
- Applied ResNet-101 to classify images at pixel level into 11 classes with 90.48% test accuracy
- Established a comprehensive evaluation index system to analyze the land use pattern with Fragstats

National UAV Intelligent Perception Competition (3rd/38) — Mar. - Oct. 2018
Team leader, *Advisor: Prof. Dr. Zhifeng Xiao, State Key Laboratory of Information Engineering in Surveying, Mapping and Remote Sensing*
- Constructed the software and hardware architecture of UAV based on ROS distributed framework
- Assisted to train the YOLOv2 model for object recognition
- Developed drone tracking algorithm to complete task-oriented autonomous flight in the competition scene<Video>
- Manage the overall direction and progress of the project

Intern Experience

KTH-GEO Wildfire Monitor<Link>, Research assistant Aug. - Sep. 2021

Advisor: Prof. Dr. Yifang Ban, KTH

- Established a processing system for Sentinel-2 Optical (Resample, Subset, etc.) and Sentinel-1 GRD/SLC SAR (Interinterferogram, Deburst, Phaseremoval, Filtering, etc.) data with Snappy library
- Assisted to develop an automatic pipeline to download and process Sentinel 1/2, and upload data to Google Earth Engine
- Collaborated to develop a website application for monitoring wildfire progress in the western U.S. and Canada

Stockholm Environment Institute, Research Assistant Jun. – Jul. 2021

- Conducted time series prediction of hourly NOx concentration in Stockholm for the next three days with Multivariate LSTM<Code>
- Evaluated the model by comparing the RMSE, MAE, MedAE, r2 score and variance score of with predictions by Prophet, SVM, KNN, DecisionTree, XGBoost and ARIMA
- Obtained an RMSE 13% and 53% less than XGBoost and DecisionTree respectively

Publications

Qian, L., Xia, F., & **Mu, Y.** (2018). Design of Autonomous UAV Airborne Processing System Based On Jetson TX2 and Lightweight Deep Learning. In *Proceedings of the Second Annual High Resolution Earth Observation Conference[C]*, 2018:25. (In Chinese)

UAV | Image Processing | Object Recognition | Lightweight Deep Learning

Honors And Awards

• Scholarship

Erasmus Scholarship ***(Top 5%)*** - European Commission Sep. 2021
KTH Scholarship ***(Top 1%)*** - KTH Royal Institute of Technology Mar. 2020
Academic Excellence Scholarship ***(Top 10%)*** - Wuhan University Oct. 2019 & 2018

• Competition

Second Award - Asia and Pacific Mathematical Contest in Modeling, China Feb. 2019
The 3rd Prize - UAV Intelligent Perception Competition, China Aug. 2018
Second Award - Mathematical Contest in Modeling (MCM), USA Mar. 2018

• Conference

Outstanding Paper - China High Resolution Earth Observation Conference (CHREOC 2018) Oct. 2018

Research Interests

I am interested in Remote Sensing, Deep learning and Computer Vision, especially using interpretable AI to solve open questions in Earth Observation.

Skills

Programming Python, C/C++, Java, Matlab, Latex, HTML, SQL (Oracle, PostgreSQL)
DL frameworks PyTorch, Tensorflow, Keras
Tools Git, Weights & Biases, ROS, MacOS, Linux
Software Arcgis, Fragstats, eCognition, Erdas, Envi, ESA SNAP