

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

3D Reconstruction from Fisheye Camera<Report> Sept. - Dec. 2021

Student researcher, *Advisor: Dr. Cenek Abl, ETH*

- Implemented the calibration algorithms of ordinary/fisheye camera based on Python and OpenCV
- Conducted SIFT and Patchmatch algorithm for SFM and MVS
- Achieved 3D reconstruction of large & small-scale (City Glockengasse & Toy James Dunk) from scratch

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 feature 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 segmentation

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 algorithms to complete task-oriented autonomous flight in the competition scene<Video>
- Managed the overall direction and progress of the project

INTERN EXPERIENCE

KTH-GEO Wildfire Monitor, Research assistant

Aug. - Sep. 2021

Advisor: Prof. Dr. Yifang Ban, KTH

- Developed an automatic pipeline to download Sentinel data, and to process, and upload them to Google Earth Engine
- Established a processing system for Sentinel-2 Optical (Resample, Subset, etc.) and Sentinel-1 GRD/SLC SAR (Interferogram, Deburst, Phasermoval, Filtering, etc.) data with Snappy library
- Collaborated to develop an online web application for monitoring wildfire progress in the western U.S. and Canada<Link>

Stockholm Environment Institute, Research Assistant

Jun. – Jul. 2021

- Conducted a time series prediction of hourly NOx concentration in Stockholm for the subsequent three days with Multivariate LSTM<Code>
- Evaluated the model by comparing the index (RMSE, MAE, MedAE, r2 score and variance score) with predictions by other models (Prophet, SVM, KNN, DecisionTree, XGBoost and ARIMA)
- Obtained an RMSE of Multivariate LSTM, which is 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

Third 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

SKILLS

Programming Python, C/C++, Java, Matlab, Latex, HTML, SQL (Oracle, PostgreSQL)

DL frameworks PyTorch, Tensorflow, Keras

Tools Git, Weights & Biases, ROS, Linux

Software COLMAP, CloudCompare, Arcgis, Fragstats, eCognition, Erdas, Envi, SNAP

Language Mandarin, English