

# YANG MU

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## EDUCATION

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**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

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**Crop Types Prediction with Temporal Convolutional Network**<Report> Nov. - Dec. 2021

Group leader, *Advisor: Dr. Mehmet Özgür Türkoglu, Prof. Dr. Konrad Schindler, ETH*

- Collaborated to train TCN and TCN with residual blocks on Sentinel-2 time series data
- Proposed Class-Balanced Loss as the sample weights in loss function
- Conducted hyperparameter tuning with pruning algorithm to speed up optimization

**Canopy Height Estimation over Switzerland Based on Deep Learning**<Report> Oct. - Nov. 2021

Group leader, *Advisor: Dr. Mikhail Usvyatsov, Prof. Dr. Konrad Schindler, ETH*

- Assisted to remove clouds by merging 20 rotations of each image
- Conducted feature extraction with Deeplabv3-ResNet101 and ResNet-101
- Collaborated to train SGD of Ridge Regression and XGBoost over different features combinations

**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 on Sentinel-2 images
- Applied incremental learning to train models in PyTorch
- Developed the visualization algorithm for segmentation results

**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 (3<sup>rd</sup>/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

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**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 (Interferogram, Deburst, Phasere removal, Filtering, etc.) data with Snappy library
- Assisted to develop an automatic pipeline to download and process Sentinel 1/2, and upload data into Google Earth Engine 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 NO<sub>x</sub> concentration in Stockholm for the next three days with Multivariate LSTM[<Code>](#)
- Evaluated the model by comparing with the RMSE, MAE, MedAE, r<sup>2</sup> score and variance score of predictions by Prophet, SVM, KNN, DecisionTree, XGBoost and ARIMA

## PUBLICATIONS

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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

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### • Scholarship

Erasmus Scholarship (**Top 5%**) - European Commission

Sep. 2021

KTH Scholarship (**Top 1%**) - KTH Royal Institute of Technology

Mar. 2020

Annual Excellence Scholarship (**Top 10%**) - Wuhan University

Oct. 2019 & 2018

### • Competition

Second Award - Asia and Pacific Mathematical Contest in Modeling, China

Feb. 2019

The 3<sup>rd</sup> 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

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

## SKILLS

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**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