



# Zhihao LIU

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## SUMMARY

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### About me

With 5 years of experience working on 12 offshore seismic projects, I have a strong technical background in geomatics and geodata science. Master's study has further enhanced my skills in geostatistics, geospatial modeling and GIS. I worked with a wide range of datasets, including offshore seismic, oceanography, bathymetry, climate reanalysis, DEM and LiDAR...I am eager to continue refining my geospatial skills after graduation (2023.06). In order to deliver geodata as a service, I am open to learning back-end or front-end programming languages to achieve this goal.

## WORK EXPERIENCE

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### Research Assistant on Geomatics

*UiO* [ 12/2021 – Current ]

- Proficient in **Geostatistics and Geospatial Modeling** using Python, with a toolkit including xDEM (co-registration), SciPy (optimizing, interpolation), Rasterio, Shapely, GeoPandas, Multiprocessing, PCA, and Machine learning (XGBoost regression)...
- Work with a variety of **Datasets** including those collected through field trips using LiDAR drones, remote sensing data, and open access sources such as ICESat-2, MODIS, Norway National DTM, and global DEMs (Copernicus, Arctic DEM, etc.)...
- Experienced in using/scripting **GIS tools** such as ArcGIS, QGIS, and automating GIS scripts.

### Field Technician / Geomatics Professional

*BGP Offshore, China National Petroleum Corporation* [ 07/2014 – 06/2021 ]

- Participated in over 12 3D/4D/OBN offshore seismic surveys as a navigator and technician globally (Norway, UK, West Africa) working within a world-class seismic team with a focus on multiculturalism and QHSE.
- Four years of coding experience, optimizing workflows through data-driven solutions ([My software](#)).
- Took technical responsibilities including contract technical review, patents, and [conference publications](#).
- Registered as a Licensed Surveyor in P.R.C.
- Get promoted to Senior Position (2021.01, assistant party chief on seismic vessel).

## EDUCATION AND TRAINING

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### Master in Geoscience (Geomatics)

*Universitetet i Oslo* [ 08/2021 – Current ]

#### Curriculum (A&B):

- **Advanced Remote Sensing and Topographic Analysis**
- IPCC AR6 Seminar
- Floods, Avalanches and Landslides
- **Surveying, Photogrammetry and Spatial Analysis**
- **Geophysical Data Science**
- Glacial and Periglacial Geomorphology

**Thesis:** [Benchmarking DEM Precision: Workflows and Applications on Snow Depth](#).

### Bachelor in Geodesy and Geomatics

*South West Petroleum University (China)* [ 08/2010 – 07/2014 ]

- With a background in Engineering, Cartography, GNSS and GIS.
- A for bachelor's thesis (A WebGIS system for urban infrastructure management).

## PROJECTS

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### **SNOWDEPTH – Global snow depths from spaceborne remote sensing for permafrost, high-elevation precipitation, and climate reanalysis**

[ 01/2022 – Current ]

This research is key to understanding the snow-depth-related climate mechanism or application, e.g. permafrost thawing, high-mountain precipitation, hydropower...

As a research assistant, I joined the field (drone) trip ([the news](#)) and worked on the ICESat-2 dataset and a variety of DEM products; thus far, I created [one of the best co-registration algorithms](#) and I am able to generate snow depth measurements for the entire of Norway based on satellite altimetry and DTM1. Now, I am trying to interpolate and feed the data into the climate/ hydrological models and contribute my codes to the open-source GIS community.

**Skills:** Regression, Machine Learning(XBGoost), Multiprocessing, Terrain Analysis, Uncertainties Analysis, Git

### **Using 5.8 million to buy a unit in Oslo, which one is worth?**

GIS-based Multiple-criteria decision analysis (MCDA) is a spatial technique for complex decision-making. [This course project shows how a geospatial expert decides which unit to buy in Oslo.](#)

I scraped property data from Finn, cleaned data, and gathered spatial information from open-access databases (Norwegian Public Roads Administration, Statistics Norway), OpenStreetMap, and satellite images, and architected a spatial model that aimed to provide best-fitting options for buyers and assess the living conditions for better urban planning regulation.

**Skills:** Web scraping, Spatial Analysis, MCDA Modeling.

### **What if the ice block expedition 1959 happens in 2021?**

In 1959, a three-ton block of ice from Mo i Rana by the Arctic Circle was trucked to Libreville by the Equator with an 11% mass loss. Is that true? What if we do it again in 2020 or 2021? The energy balance model can explain the retreat of the glaciers but also can answer the question here.

[This is a course project](#) where I applied an energy balance model and coupled ERA-5 with a historical event (the Ice Block Expedition of 1959).

**Skills:** Numerical modeling.

### **Essaouira side-scan sonar survey, Offshore Morocco**

[ 04/2017 – 04/2017 ]

The main point of the pre-survey was identifying the possible shallow hazards for the seismic streamers: reefs, shipwrecks, and pipelines.

I was in charge of and conducted a side-scan sonar pre-survey for seismic projects. I am also familiar with offshore magnetic and gravity surveys that we do simultaneously during seismic acquisition.

**Skills:** Side-scan Sonar, HSEQ, Independent Work

### **North Sea Quad 35 Hybrid 3D seismic survey**

[ 07/2020 – 12/2020 ]

[Quad 35 is the first hybrid seismic combined streamers and nodes](#) for commercial purposes.

I worked as a technician for contract technical review, onboard acquisition, data QC & reprocessing, and follow-up work. I was the person who dug deepest into the data quality of Q35. And I got [the best commendation](#) from the client for modeling this novel acquisition to make it more efficient and understandable.

**Skills:** Quality Control, Technical Support, Follow-up

## DIGITAL SKILLS

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Automating GIS / Data-driving Solution / Data QC & Processing / Numerical Modeling / Python / Matlab

## LANGUAGE SKILLS

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Mother tongue(s): **Chinese**

Other language(s): **English (Professional working proficiency)** | **Norwegian (beginner)**

## HOBBIES AND INTERESTS

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### Marathon

- Not bad runner with 130 (half-marathon) and 330 (marathon) of the personal best.
- Have organized medium size marathon (15K) and was in charge of supply and volunteers.

### OSI Friluft (Volunteering)

- Board member and tour leader of OSI Friluft.

## REFERENCES

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### 2021 - Present

Professor and Supervisor, [Andreas Max Kääb](#), Email: [a.m.kaab@geo.uio.no](mailto:a.m.kaab@geo.uio.no), Mobile: +47 22855812

Project Leader and Co-supervisor, [Désirée Treichler](#), Email: [desiree.treichler@geo.uio.no](mailto:desiree.treichler@geo.uio.no), Mobile: +47 22857869

### 2016 - 2021:

Chief geophysicist of BGP Prospector, [Bo Wen](#), Email: [wenbo01@cnpc.com.cn](mailto:wenbo01@cnpc.com.cn), Mobile: +86 18622259275