Dr KILIAN VOS

Earth Observation Scientist

🌐 kvos.github.io
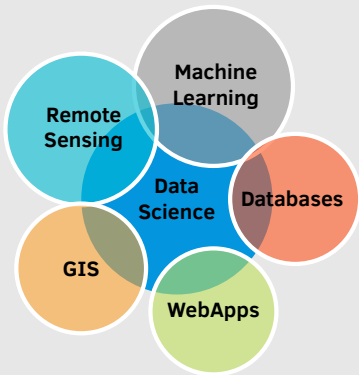
⭘ kvos

✉ voskilian@gmail.com

Technical Skills

Overview

Programming

0 ——————→ 5000 *LOC*

Python [pytorch, geopandas, rasterio]

JavaScript • SQL • HTML /CSS

C • Java • R

Software & Tools

Image processing	● ● ● ● ●
Time-series analysis	● ● ● ● ●
Google Cloud Platform	● ● ● ● ○
Django/Leaflet	● ● ● ● ○

Education

PhD., Remote Sensing & Ocean Eng.
Link to thesis
University of New South Wales
2018 - 2022 | Sydney, Australia

MSc., Environmental Engineering
Swiss Fed. Institute of Tech. (EPFL)
2015 - 2017 | Lausanne, Switzerland

BSc., Environmental Engineering Swiss
Fed. Institute of Tech. (EPFL)
2012 - 2015 | Lausanne, Switzerland

Experience

June 2023 - Present

Senior Remote Sensing Scientist   Dept. of Environment, NSW Government

- R&D to develop an automated pipeline for **real-time satellite monitoring of water resources** using satellite imagery and LiDAR.
- Efficient cloud deployment on GCP to get one observation every 5 days covering a region as large as France. Development of a full-stack web application to serve the data to end users in real-time.
- *Tools*: GCP, Postgres/PostGIS, Django, Leaflet, Image Processing

Nov 2020 - June 2023

Data Scientist   UNSW Mechanical Engineering / DST Group

- AI projects funded by the Defence Science and Technology Group
- **Project 1:** *Early detection of mechanical faults on aircrafts from vibration signals using LSTMs and SVMs.*
  Tools: PyTorch, Tensorflow, LSTMs, SVMs, Time-series regression
  Outcome: Developed a robust fault detection algorithm published in Vos et al. 2022. This led to a second contract being awarded.
- **Project 2:** *Development of a Reinforcement Learning framework to optimise maintenance of a fleet of aircrafts.*
  Tools: OpenAI Gym, RL, Markov Decision Process, Deep Q-learning
  Outcome: presentation at the 2023 Australian International Aeropace Congress (AIAC) and publication in the Aeronautical Journal. Code available in a Github repository.

Jan 2022 - June 2023

Postdoctoral Research Fellow   UNSW Water Research Laboratory

- Collaboration with US Geological Survey to develop a **national coastal hazard assessment** for the US based on remote sensing data (webGIS available at `http://coastsat.wrl.unsw.edu.au/`).
- Organisation of a **Data Challenge** to benchmark existing shoreline detection algorithms. Available on the SDS_Benchmark Github.
  Tools: Python, Google Earth Engine, GDAL, scikit-image, GCP

Feb 2018 - Feb 2022

PhD Researcher   UNSW Water Research Laboratory

- Development of the open-source **CoastSat toolbox** for coastal monitoring from publicly available NASA/ESA satellite imagery (Landsat, Sentinel-2). It is widely used with 650 stars on Github.

Jul 2016 - Feb 2017

Intern, R&D of a drone company   SenseFly SA (now Ageagle)

- Sensefly produces aerial imaging drones for professional applications (150 employees). Worked on the optimisation of the autopilot in high wind conditions, photogrammetry and cloud points.

Publications and Grants

- Full list of publications available on **Google Scholar**
- USD$500k Grant Co-Pi in collaboration with the US Geological Survey. Grant name: Developing methodologies for coastal remote sensing and hazards (RG212070).
- AUD$200k Co-PI in collaboration with DSTG group. Grant name: Prognostics and Deep Learning for Propulsion System Health Management (RG220019).

Awards

- **1st Prize Winner at *Maxar Spatial Challenge***: real time dashboard for coastal monitoring using Maxar imagery (link to dashboard).
- **Best Paper Award** at *Coastal Dynamics 2021 Conference*.
- **UNSW Scientia Scholar**: research excellence scholarship at UNSW.
- **EPFL Excellence Scholarship**: awarded to graduate students with an outstanding curriculum.