

Random Forest for Discontinuity Detection in GNSS Station Time Series

Project Proposal, 2023

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1 Objectives

The objectives of this project are to develop a Random Forest Machine Learning Algorithm for Discontinuity Detection in GNSS Station Coordinate Time Series and create a proof of concept processing pipeline. For a review of machine learning algorithms for GNSS discontinuity detection, see here [1].

The pipeline should be able to extract time-series from GNSS stations from EUROPE, EPOS, the European Plate Observing System (<https://www.epos-eu.org>) stored in a traditional SQL database, store them in a modern 2d array format (TileDB, HDF5, Zarr etc) and then perform discontinuity detection. The development language is Python.

2 Tasks

T1 Study of the Random Forrest Technique and file storage formats. (0,75 month)

T2 Requirements Specifications. (0,25 month)

T3 Development of the Solution. (2 Months)

T4 Testing and Validation. 0,5 month

T5 Project Write-up. 0,5 month

3 Technical and Academic Requirements

Network and Distributed Programming. SQL Databases. Java Programming Language. Software Engineering.

4 Expected Results

- 1 Project Software
- 1 Report.

5 Contacts

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References

- [1] Laura Crocetti, Matthias Schartner, and Benedikt Soja. Discontinuity detection in gns station coordinate time series using machine learning. *Remote Sensing*, 13(19), 2021.