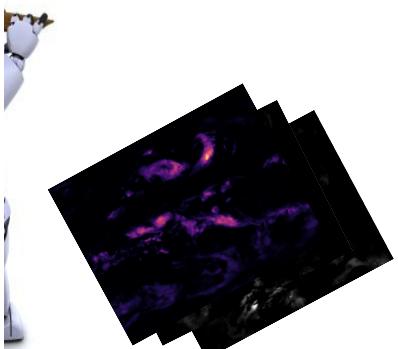


asterMiner: Discovering Knowledge Hidden in Raster Images

By

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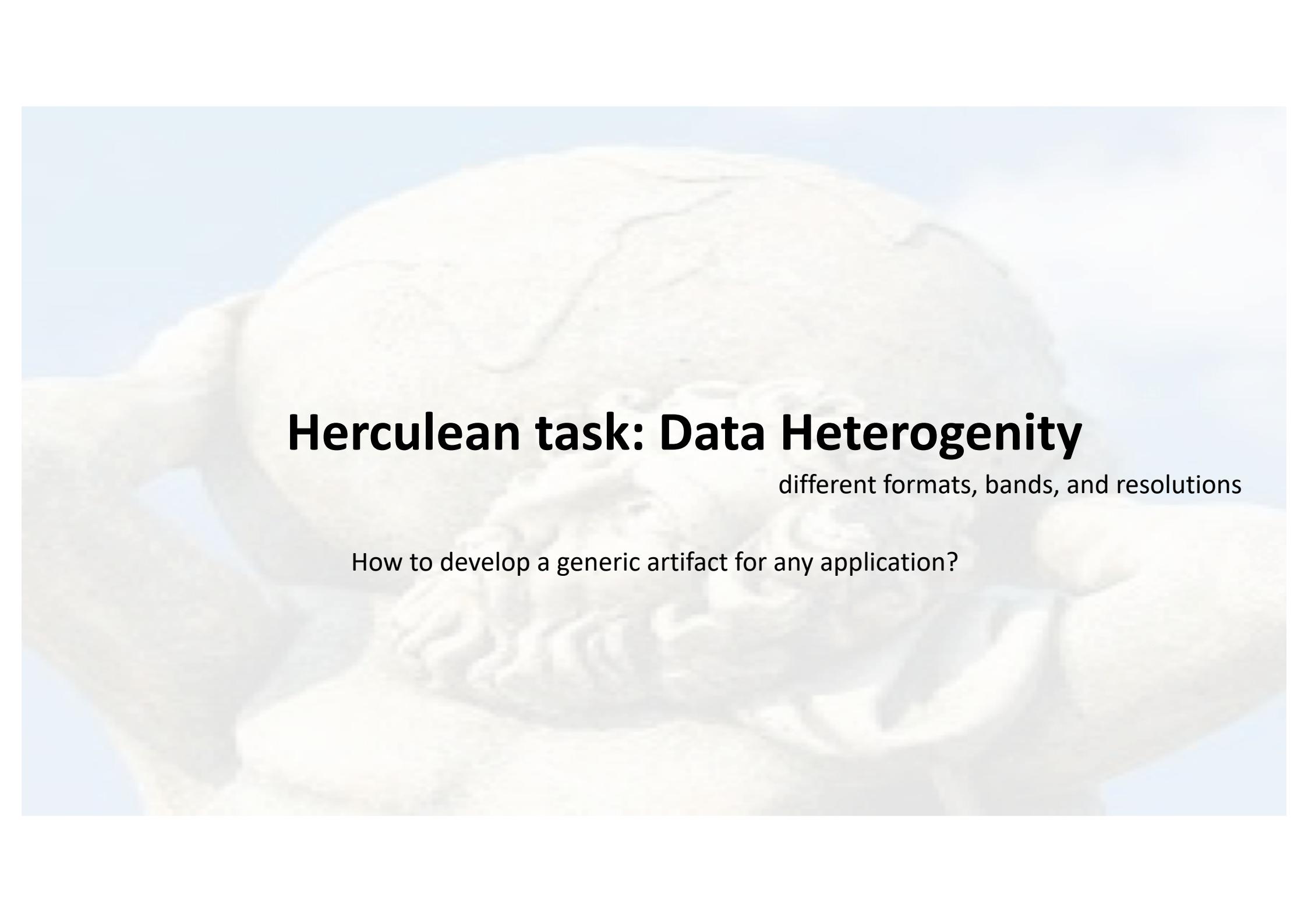


Agenda

- Motivation behind the development of rasterMiner
- The challenges we faced
- Our Idea
- rasterMiner and its features
- Demos

Motivation

Faster dissemination of technological advances in computer science to applied areas of computing

The background of the slide features a large, light-colored rock formation, possibly sandstone, with prominent horizontal layers and vertical streaks. It is set against a clear, light blue sky.

Herculean task: Data Heterogeneity

different formats, bands, and resolutions

How to develop a generic artifact for any application?

Our Solution: Abstraction

Convert raster images into a matrix



Raster image

(without loss of generality)

Bands →

pixel_1

pixel_2

...

pixel_m

$m \times n$

Matrix

Our Idea:

Convert raster file(s) into a Matrix/Data Frame



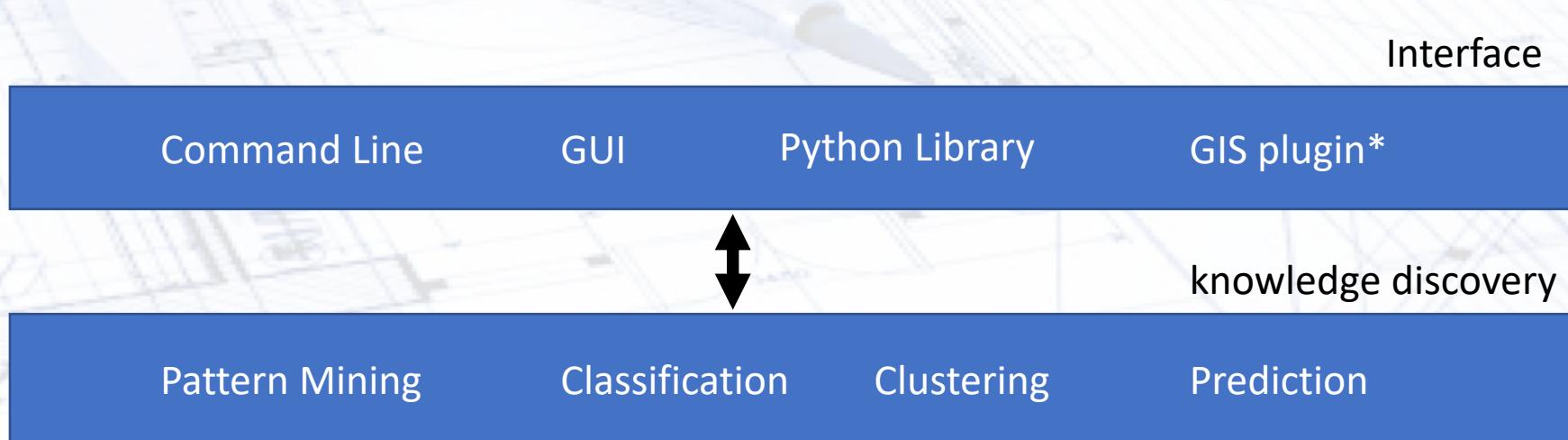
Perform analytics on the Data Frame



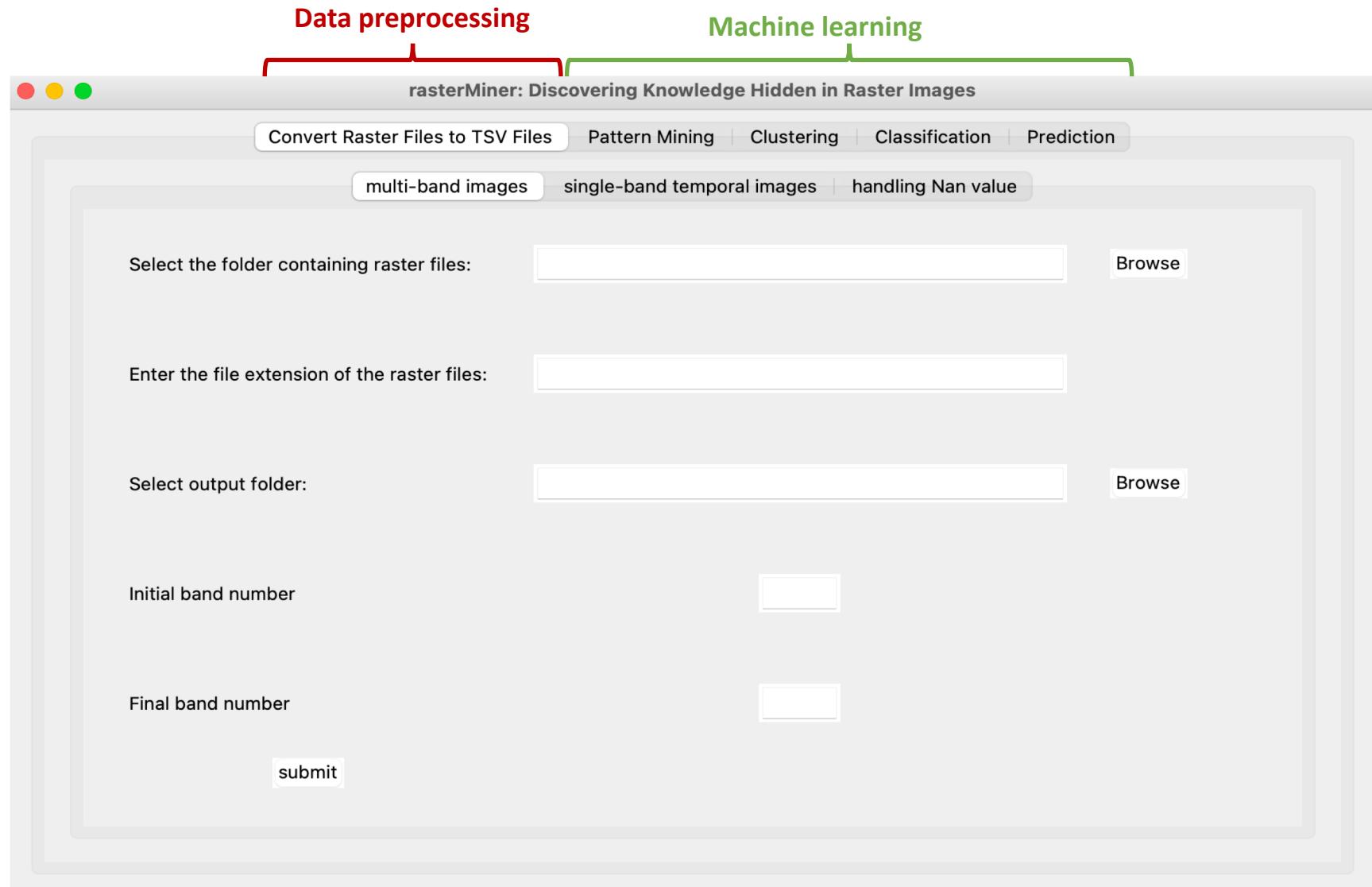
Discover Knowledge



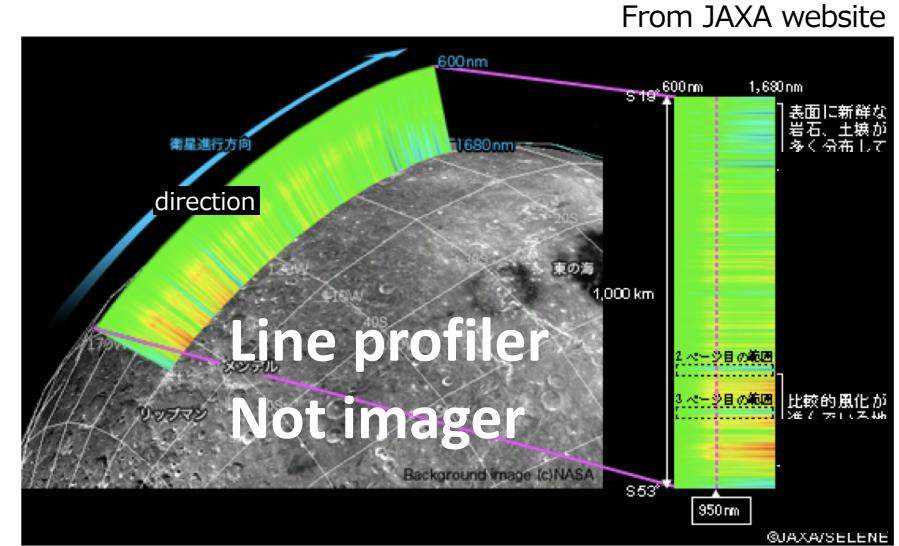
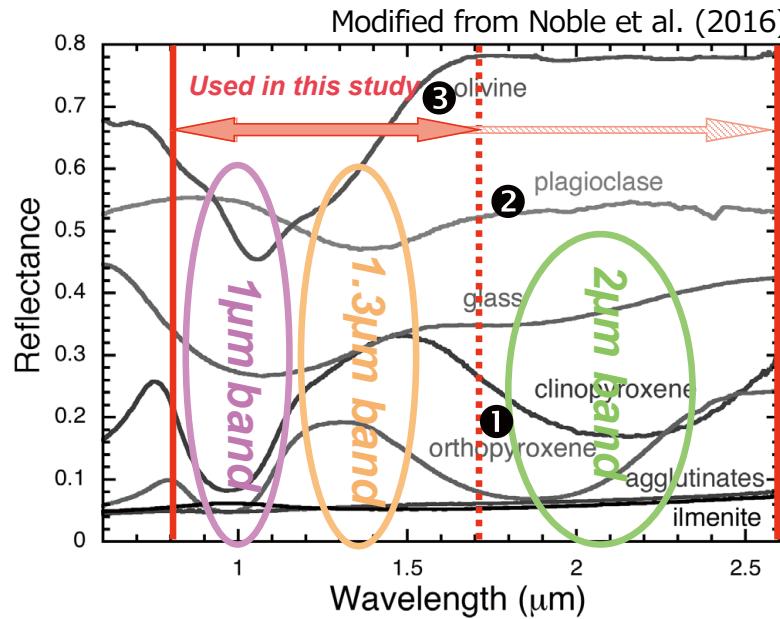
rasterMiner: Architecture and Its features



II of rasterMiner

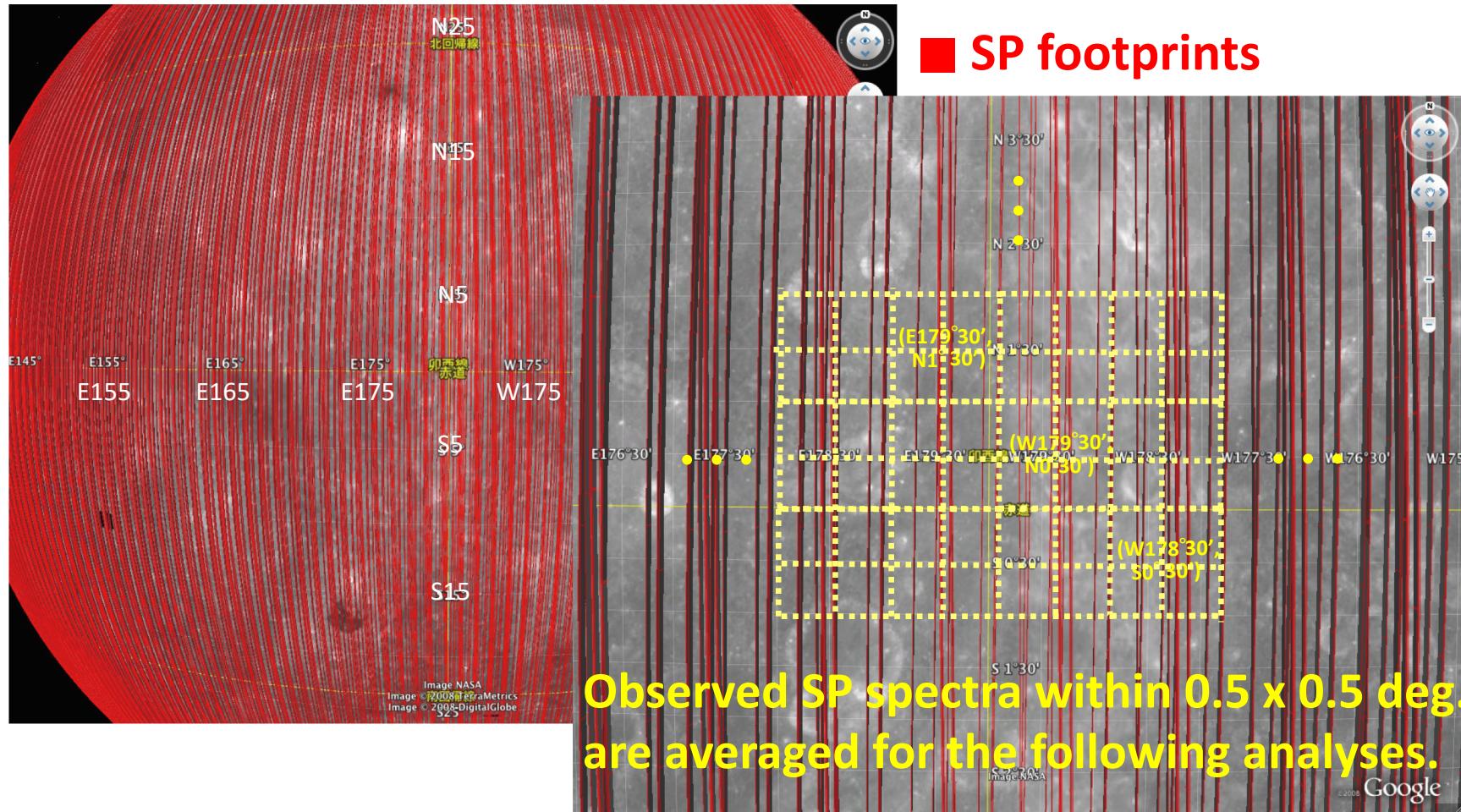


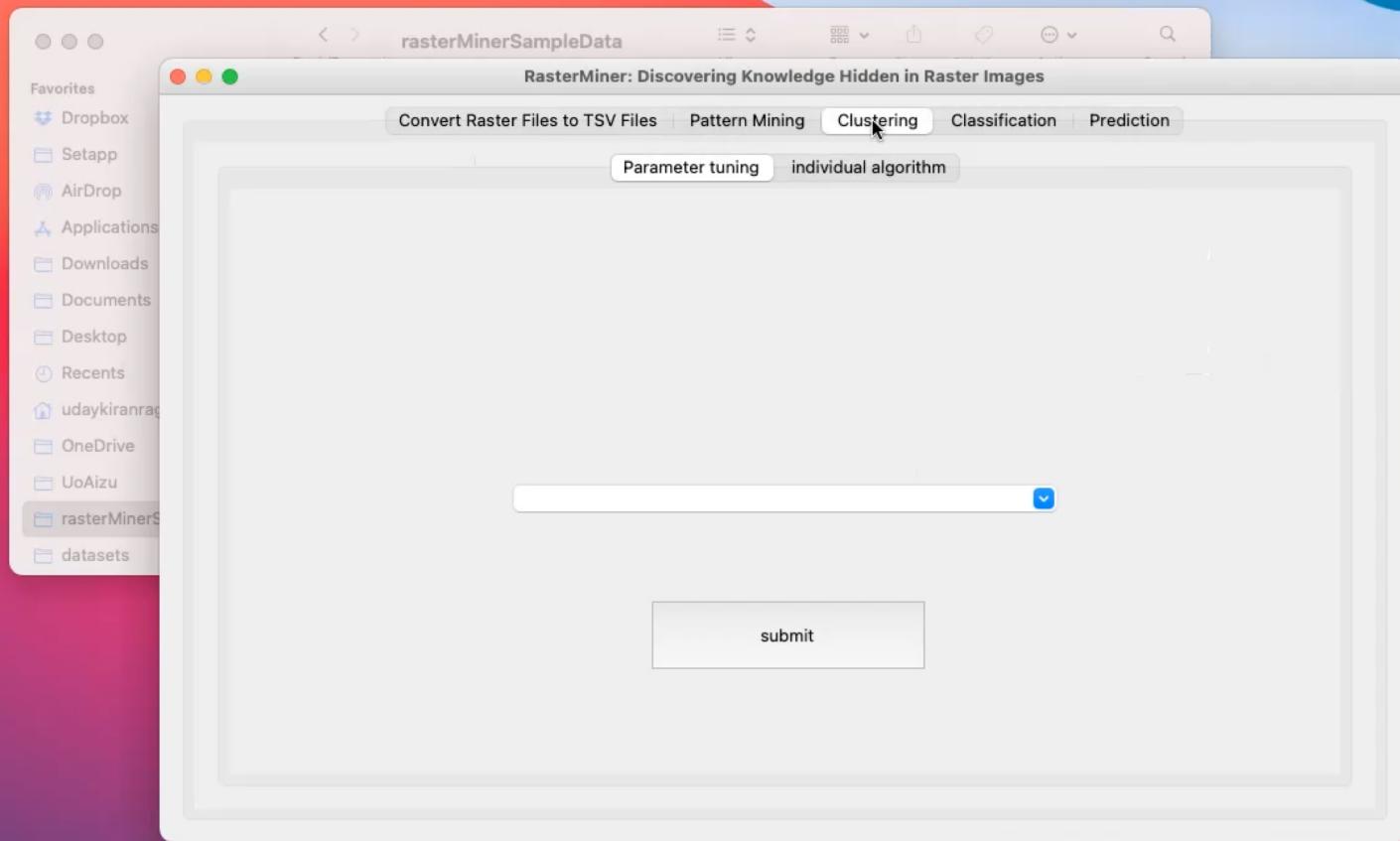
Input data: VNIR spectra of the Moon from Kaguya/Spectral Profiler (SP)



- By comparing the observed SP spectra with the known sample spectra measured in laboratories, we can identify the **distributed minerals** on the lunar surface.
- SP data amounts to **70 million spectra** in total.
It is not so easy to **analyze all of data thoroughly and appropriately**.

$70M \rightarrow 129,600$ reduced SP spectra (720×360 gridded) used for analyses





You are screen sharing Stop Share

Thank you & Questions

- Creator and Architect: Prof. RAGE Uday Kiran
- Developers: Kazuki Tejima and Raashika Edulla
- Technical support: Prof. Yoshiko Ogawa
- Source code URL: <https://github.com/udayRage/rasterMiner>
- Manual URL: <https://udayrage.github.io/rasterMiner/index.html>
- License: GNU V3