University of Applied Sciences and Arts Northwestern Switzerland
School of Architecture, Civil Engineering and Geomatics

FHNW GEOMATICS

GeoPython 2019

Muttenz Switzerland
Basel

June 24-26

http://2019.geopython.net/

All talks: https://www.youtube.com/watch?v=3KRYObqpMlk

What?

- EO
- Data wrangling
- Plotting
- Time
- Debugging decorators
- FME interaction
- BIM
- Open Source piplines
- QGIS
- Image analysis
- Machine Learning (and Deep Learning)
- Processing frameworks
- Geology tools

Earth Observation

- Sinergise – the company behind Sentinel Hub - were present: https://www.sentinel-hub.com/

- https://github.com/sentinel-hub/eo-learn
  - Docs are here: https://eo-learn.readthedocs.io/en/latest/

Data wrangling - GeoPandas

- Demos and examples
- https://github.com/jorisvandenbossche/geopandas-tutorial
- Widely used (but no direct QGIS compatibility)
- Doesn't have the frills of Arc etc. (which means you may have to handle more things

  e.g. with tolerances of points actually in the same location as GeoPandas runs a location to a v. high dp number – need to apply buffers at your threshold for some checks e.g. self-intersects

  - for more on this: https://shapely.readthedocs.io/en/stable/manual.html

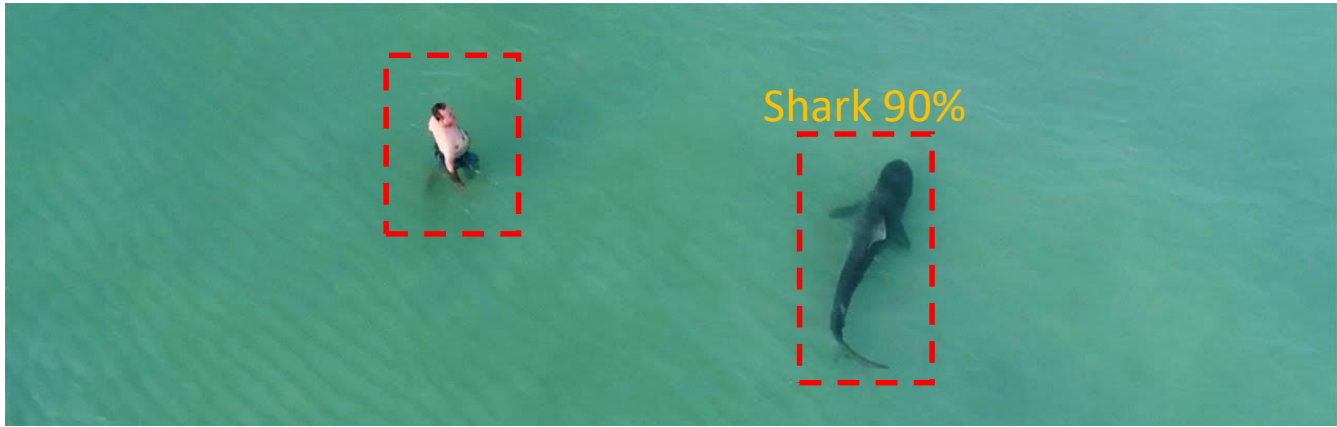
Data analysis

- rasterstats: https://pythonhosted.org/rasterstats/

exists solely to extract information from geospatial raster data based on vector geometries

Machine Learning (+ Deep Learning)

- Wide use of TensorFlow
- Various applications
  - Shark recognition
    - Slides: https://docs.google.com/presentation/d/1RbAGtHVKhspFvXRTmriFZGAQxWh9cmMnqRp2U_drDvs/edit#slide=id.g5c2a762242_0_0
    - Example workflow: https://github.com/AndrewCarterUK/tf-example-sharks
  - Wild animal mapping for management based on drone footage



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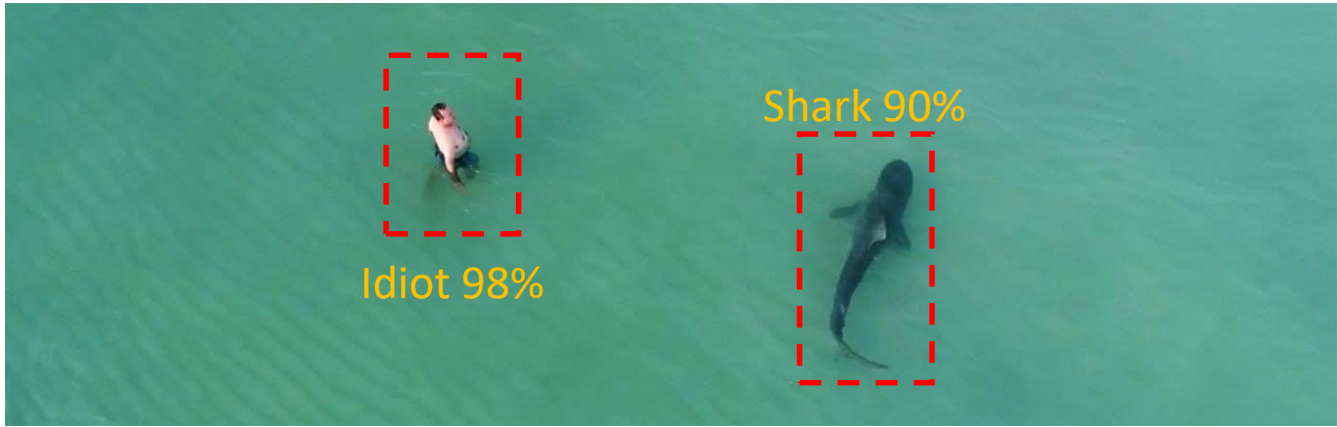

- New PyQGIS API docs out: https://qgis.org/api/
  - Cheat sheet https://docs.qgis.org/testing/en/docs/pyqgis_developer_cookbook/cheat_sheet.html
  - Cookbook https://docs.qgis.org/3.4/en/docs/pyqgis_developer_cookbook/
- Function decorators now available to make your funcs QGIS compatible
- Good point made last week at the digital workshop about how it would be good to give to open source (as much as take)….

Time

- pytz: https://pypi.org/project/pytz/

Here's reddit's take on this (a solid and trusted source of info):

- *pytz does timezone-related stuff better*
- *Python built-in code relies on the operating system to provide that info [which makes your] code operating-system dependent*
- *Important because different OSs treat time differently*
- *If your ultimate goal is consistency and correctness, then pytz is a good choice.*
- *If you can live with inconsistencies caused by discrepancies in OS handling of timezone-related info, then you don't need it.*

Geology

- GemPy
  - https://github.com/cgre-aachen/gempy
  - https://gempy.readthedocs.io/

Debugging with PySnooper

- https://github.com/cool-RR/PySnooper

Plotting with PyCharts (js)

- https://pyecharts.org/
- https://github.com/pyecharts/pyecharts

Finally… presentations with Jupyter

- Did you know you can make presentations directly from Jupyter notebooks?
  - https://dzone.com/articles/creating-presentations-with-jupyter-notebook