



Archaeological practises in the Age Artificial Intelligence

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Artificial Intelligence

ARTIFICIAL INTELLIGENCE (AI)

Any technique that enables computers to mimic human behaviour



MACHINE LEARNING (ML)

Ability to learn without explicitly being programmed



DEEP LEARNING

Extract patterns from data using Neural Networks





AI and space technologies for archaeology

Remote Sensing Archaeology



Identifying anthropogenic traces

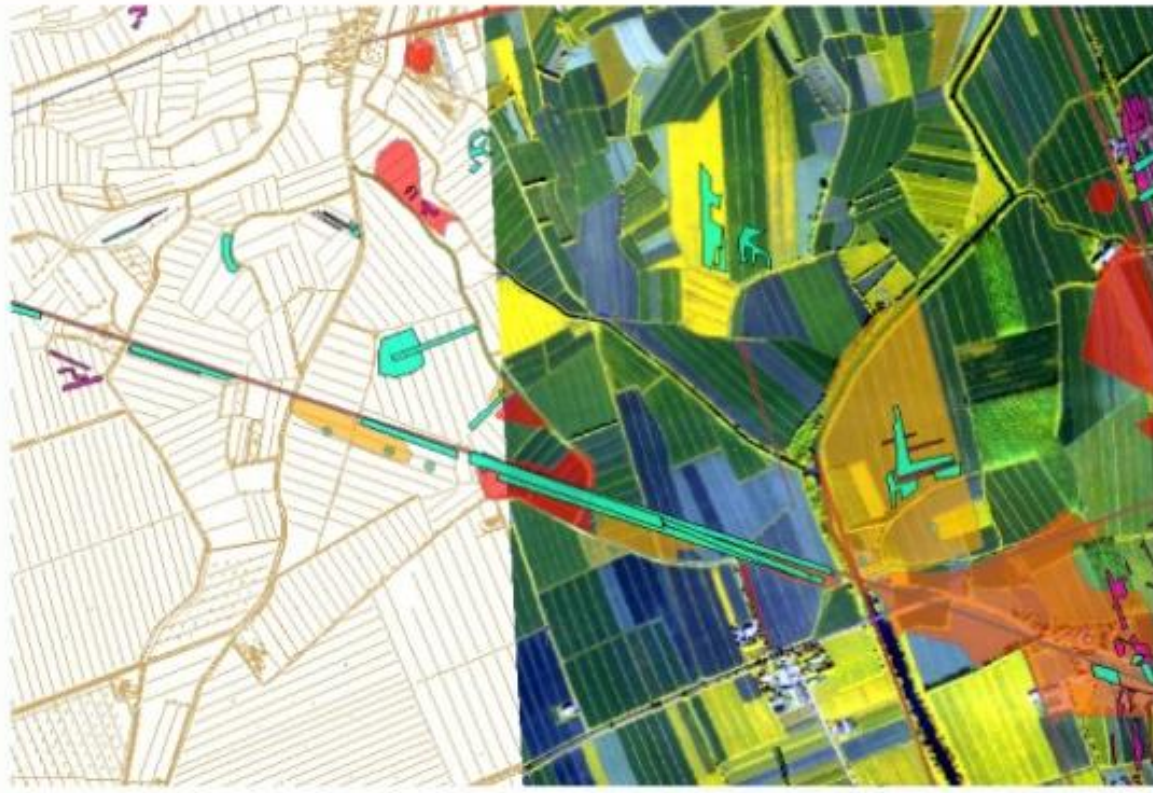


AI for automated detection of archaeological heritage



What can AI do for us?
...more than us...





0 150 300 600 900 1200 1500 Meters

Legenda

Aree trasversali forti	Tipologia di vocata
■ Alta concentrazione	■ Inglese
■ Media concentrazione	■ Pratica
■ Basse concentrazione	■ Non identificate

Mapping for understanding,
mapping for protecting





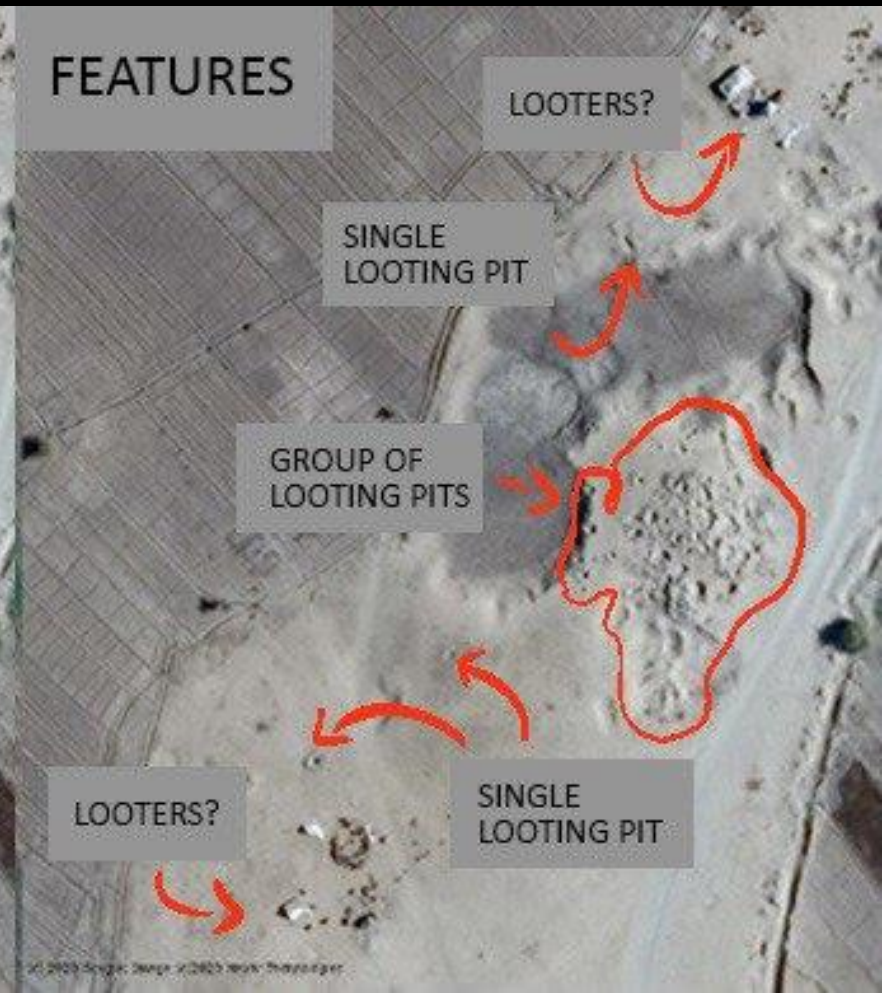
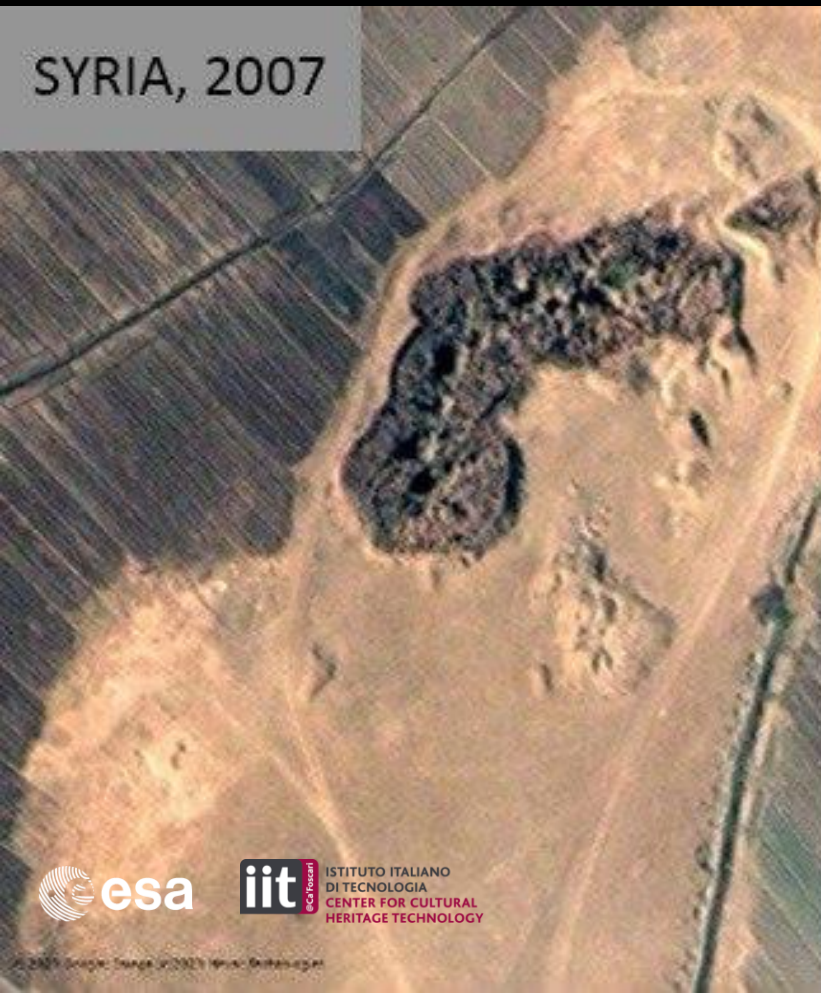
Archaeological risks maps

Challenges

- Protect and preserve still-buried archaeological heritage that has been identified using advanced detection methods (remote sensing, geophysics, AI etc)
- At National level: promote digital integrated platforms that can be used, integrated, updated from all the actors involved in planning policies and activities archaeologists, town and regional planners and enable them to consult one another more actively so that they can design infrastructures that do not negatively impact archaeological sites
- At broader pan-European level: promote digital data sharing across MS especially in border areas where they can provide useful information to better understand cultural landscapes across our current borders.

- Increase availability of remote sensing data. Copernicus platform promises enormous opportunities for heritage protection and its use should be incentivised.

Not only scientific discovery...



Challenges and needs

- Promote availability of data from remote sensing and other sources to be processed via AI to stop looting
- Support the exchange via protected digital platforms of information from scientific institutions to relevant public authorities to pool information on any illicit excavations identified;
- Support the appropriate training both on AI aspects and remote sensing

AI and trafficking of cultural heritage



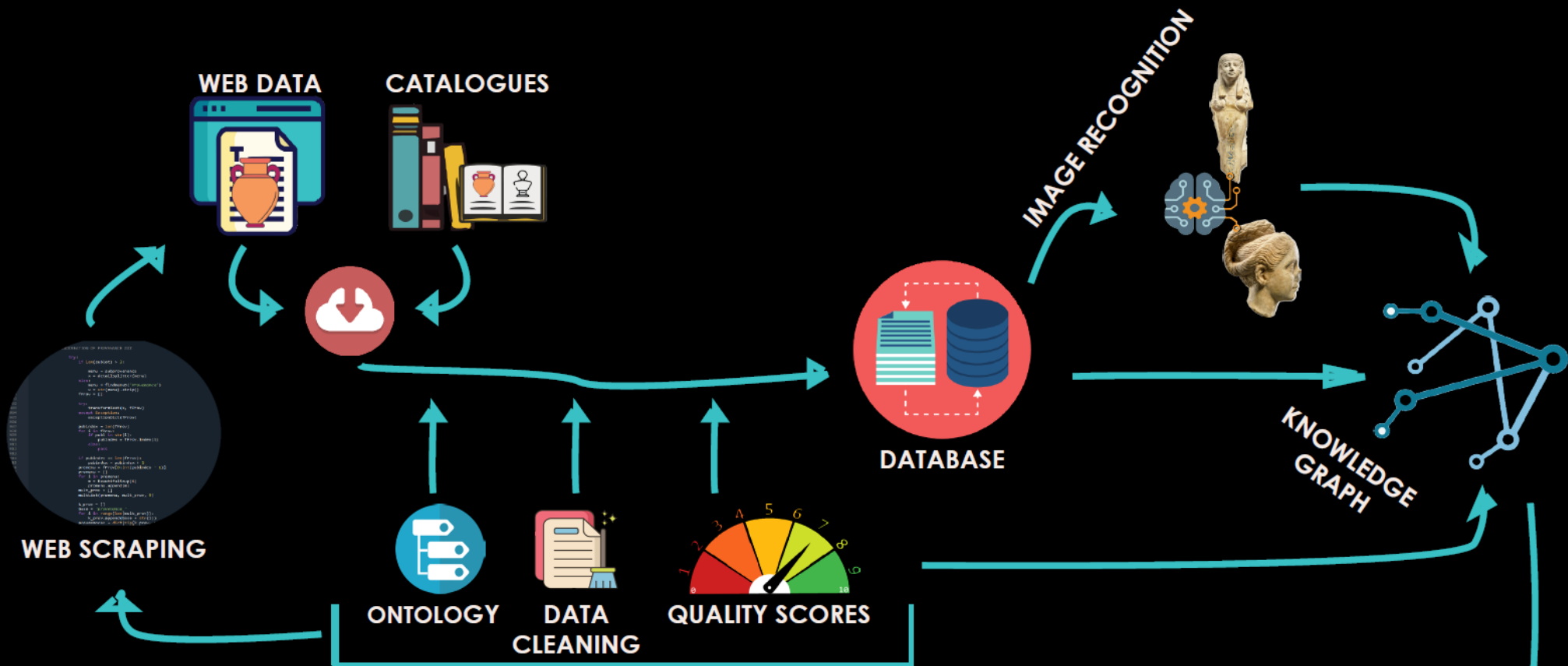
```
LOCATION OF PROVENANCE ***
try:
    if len(sublot) > 3:
        menu = subprovenance
        x = detailSplitter(menu)
    else:
        menu = findmenuB('Provenance')
        x = str(menu).strip()
    fProv = []

    try:
        transformText(x, fProv)
    except Exception:
        exceptionDict(fProv)

    pubindex = len(fProv)
    for i in fProv:
        if publ in str(i):
            pubindex = fProv.index(i)
        else:
            pass

    if pubindex == len(fProv):
        pubindex = pubindex + 1
    prosmenu = fProv[0:int(pubindex - 1)]
    prosmenu = []
    for i in prosmenu:
        m = BeautifulSoup(i)
        prosmenu.append(m)
    mult_prov = []
    multList(prosmenu, mult_prov, 0)

    k_prov = []
    base = 'provenance_'
    for i in range(len(mult_prov)):
        k_prov.append(base + str(i))
    provenances = dict(zip(k_prov,
```

The background features a complex, glowing blue wireframe mesh that resembles a 3D point cloud or a digital reconstruction of a structure. Overlaid on this is a dark blue silhouette of a classical building facade, showing architectural details like a pediment and columns. The overall aesthetic is futuristic and digital.

Ethics in AI for study and protection of
archaeological heritage



Thanks for your attention.