SAFIY Feature Extraction Project’s Contribution to the Sustainable Development Goals

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Outline

• Sustainable Development Goals
• SAFIY Project
• Conclusion
SAFIY

• SAFIY (Smart Application for Feature extraction & 3D modelling using high resolution satellite Imagery)

• Objective: automated system that can generate geospatial information based on satellite data to aid the planning and monitoring of environmental and urban change in the UAE.
SAFIY

• Extracts the following features:

- Roads
- Water
- Vegetation

Phase 1
June 2015 – May 2016

Phase 2
November 2016 – April 2017
### Satellite Data: DubaiSat-2, Deimos-2, and Worldview-3

<table>
<thead>
<tr>
<th>Mission</th>
<th>Spatial resolution</th>
<th>Spectral bands (nm)</th>
</tr>
</thead>
</table>
| **DubaiSat-2** | Pan: 1m Multispectral: 4m | Pan: 550-900  
Blue: 450-520  
Green: 520-590  
Red: 630-690  
NIR: 770-890 |
| **Deimos-2**  | Pan: 0.75m Multispectral: 4m | Pan: 450-900  
Blue: 420-510  
Green: 510-580  
Red: 600-720  
NIR: 760-890 |
SAFIY

• Satellite Data: DubaiSat-2, Deimos-2, and Worldview-3

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• Roads
  - Support Vector Machine (SVM) classification.
  - Extracted road layer can help monitor road infrastructure and analyze different areas where roads are needed.
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• Water

- Normalized Differential Water Index (NDWI) \( NDWI = \frac{\text{Green} - \text{NIR}}{\text{Green} + \text{NIR}} \)

- Monitoring water resources in different locations, such as dams.
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• Vegetation
  - Normalized Difference Vegetation Index (NDVI) \( NDVI = \frac{NIR - Red}{NIR + Red} \)
  - Map vegetation areas and health.
  - Monitor and study changes in the environment.

Accuracy of 90%

DubaiSat-2

Binary Ground Truth

Extracted vector layer
SAFIY

• Palm Trees

- Assess agriculture productivity and health.

Al Ain Farms, UAE
SAFIY

• Mangroves
  - Monitor health and changes to mangroves for preservation.
  - Reduce impact on marine life.
Conclusion

• Remote sensing applications data can be utilized to reach the sustainable development goals.
• Small contributions = big impact!
Thank You

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