Satellite constellations & the protection of dark and quiet skies

Space is vast, the growing number of spacecraft, along with current and planned satellite constellations, it is becoming uncomfortably crowded, threatening dark and quiet skies.

Space Situational Awareness
Detect, predict and assess the risk to life and property

- Predict satellite passes
- Plan clean observation windows

→ **Astronomy observations**

The design of collision assessment and avoidance tool that automatically assesses the risk of in-space collisions and propose effective collision avoidance maneuver. By enabling reliable risk mitigation, it helps protect the long-term space environment by preventing fragmentation events and the formation of debris.

Using deep learning for the detection, classification, and masking of satellite trails in astronomical images. This solution will help in identifying streaks in astronomical images, removing contamination & recovers science and protecting data quality for current observatories.

Credit: CTIO/NOIRLab/NSF/AURA/C

Dr. Bekhadda Nacera

UN/SKAO Workshop on Dark and Quiet Skies for Science and Society 2025

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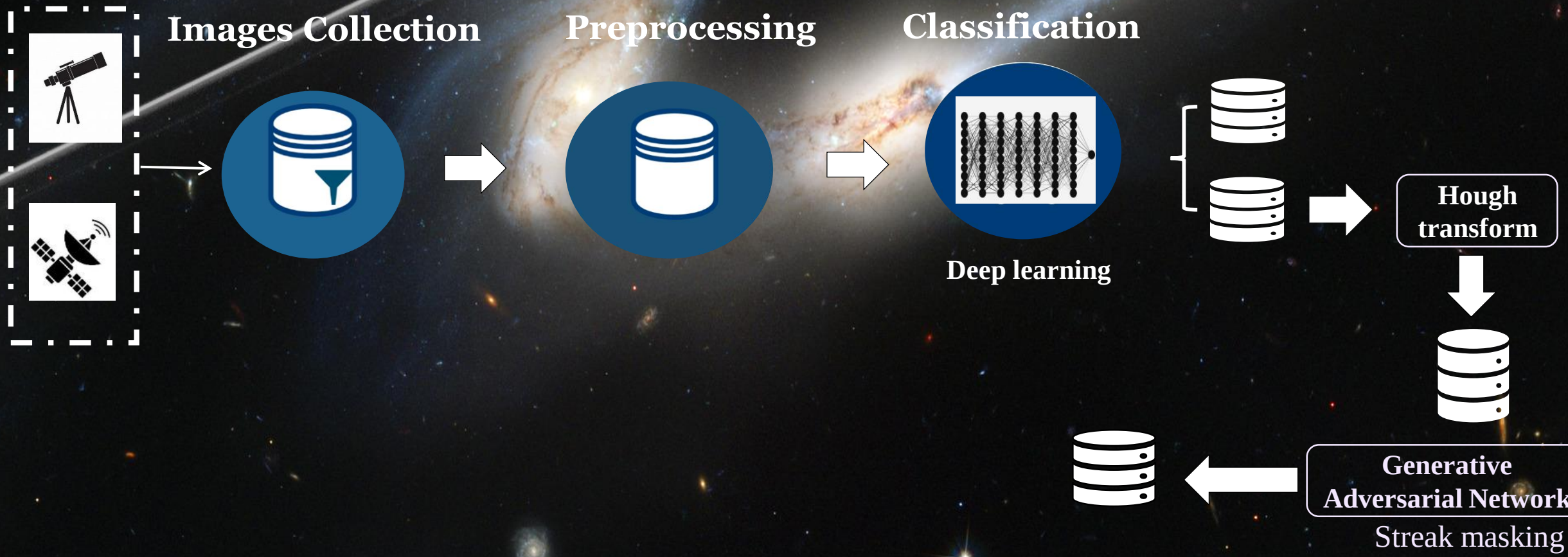
Our forthcoming project on image processing
Satellite trail detection & masking using deep learning



Credit:Courtesy of NASA/STScI

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To train effective satellite streak detection models, we need a large, labeled dataset of astronomical images. Therefore, we invite observatories, research institutions, and satellite operators to collaborate by sharing annotated data to help develop solutions that preserve the night sky for science.

Data requirement

Data sharing

Protecting dark and quiet skies is not just the duty of astronomers or the aerospace community;

it is the responsibility of every individual on this planet.

By working together, we can ensure that humanity's window to the universe remains open, inspiring curiosity, discovery, and wonder for generations to come.

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Credit: ESO/José Francisco Salgado