# Student Activities
# Stellenbosch University

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UNIVERSITEIT • STELLENBOSCH • UNIVERSITY

Electronic Systems Laboratory
Department of Electrical & Electronic Engineering
Stellenbosch University

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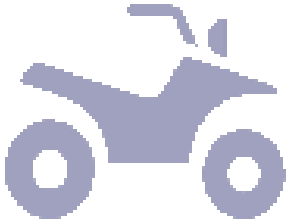
# Stellenbosch University

ESL

Electronic Systems Laboratory

Aeronautical Systems



Terrestrial Systems

Space Systems

# Star Tracker and Stellar Gyro

Gabriël Roux

- Sensor fusion of
  - Star tracker – 1 Hz update
  - Steller Gyro – 100 Hz update
- Development of Star Tracker Evaluation Environment; S.T.Ev.E
- Goal
  - 10 Hz update rate

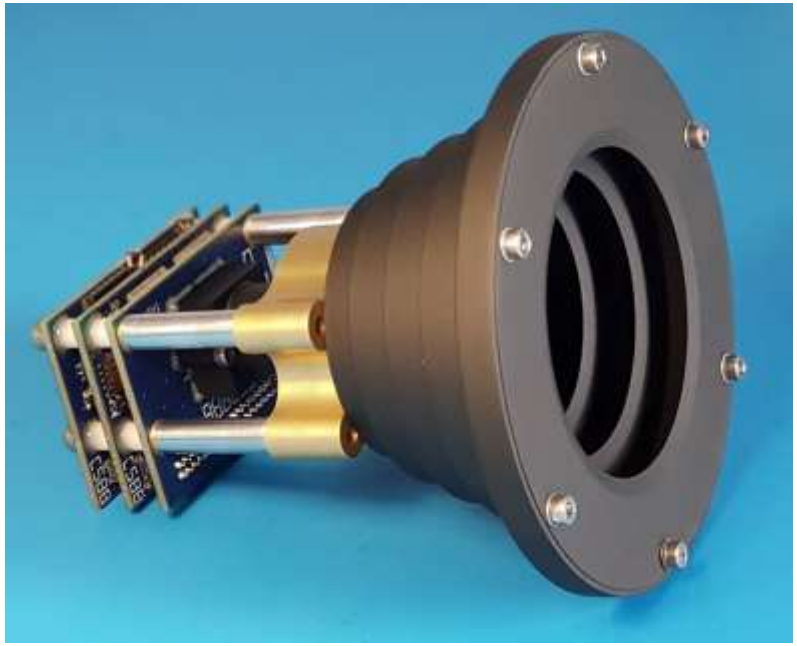


Image: CubeSpace

# Deployment Mechanism for a Spinning Solar Sail

**Luke Hibbert**

- Passive Deployment
- State estimation of booms without direct measurement
- Scalable solution with accompanying dynamic system model

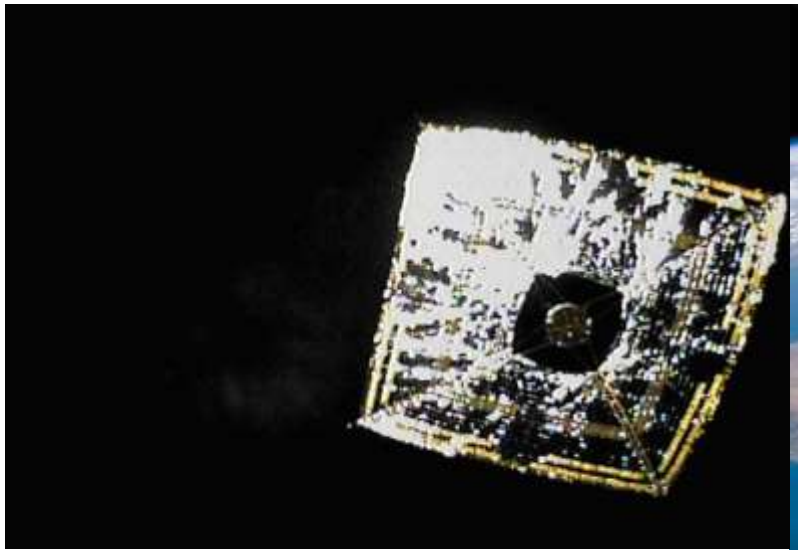


Image: IKAROS - JAXA

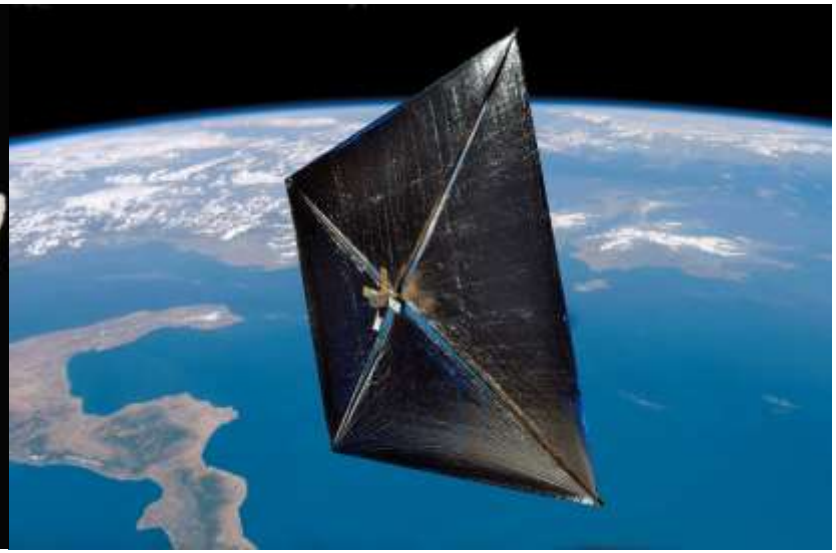


Image: LightSail – Planetary Society

# IR Horison Sensor

Hein Wessels

- Determine attitude locating horizon on image
- Developed new hardware and software
- Calibrate lens distortion and thermal response
- Emulation environment for testing
- Achieved < 0.1 degree accuracy

Images: Hein Wessels

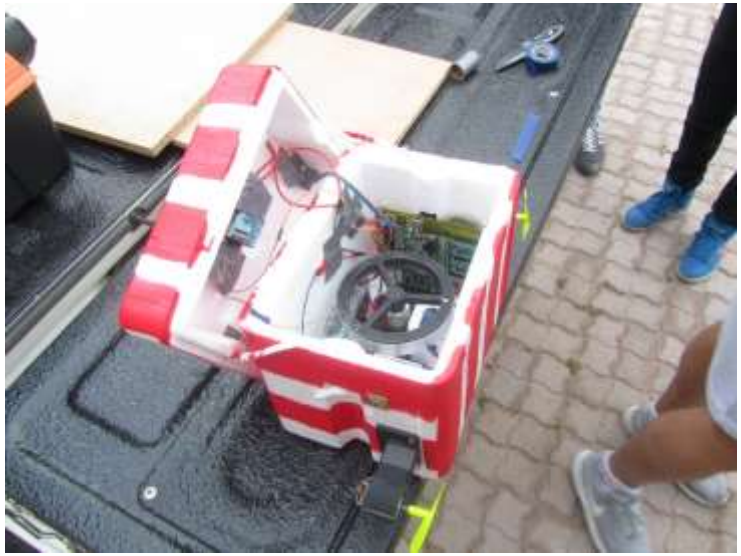
# Subpixel Image Translation Determination

Jürgen Ludüman

- Determination shift between subsequent 2 images
- Achieve accuracy of <0.1 pixels
- FPGA based architecture

# CanSat Launch

- 2 CanSats launched with weather balloons
- Yaw axis stabilisation




4.3
Vertical
m/s
11
25130
25109
3:21 AM
N
W
E
S
216°
31
KPH
Speed X5