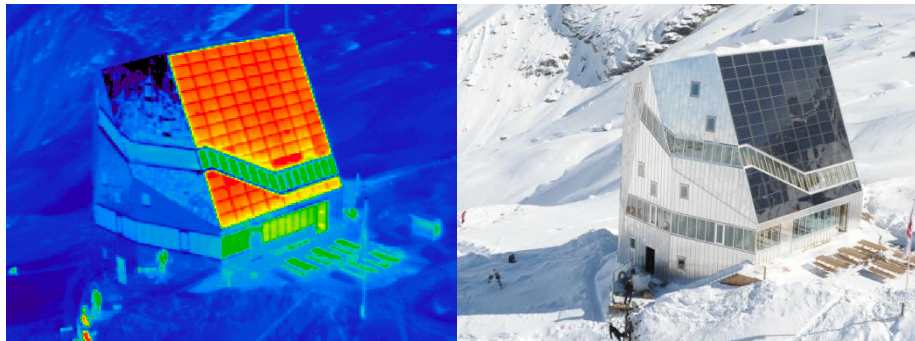


3D-modelling of the New Monte Rosa Hut with terrestrial infrared images in combination with UAV-image Data



Master Thesis

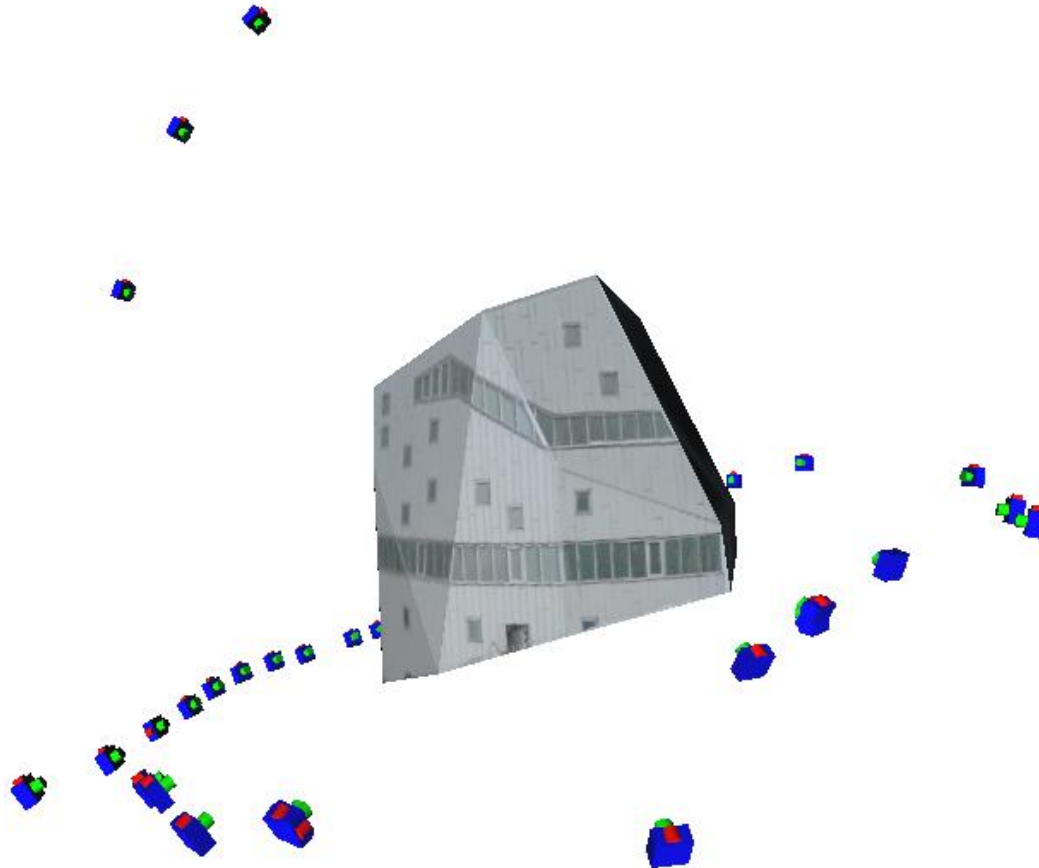
Cordonier Pierre-Cédric, MSc ETH Bau-Ing.

Lead: -Prof. Dr. Hilmar Ingensand

Supervisors:

- Dr. Henri Eisenbeiss
- Dr. Karim Ghazi Wakili
- David Novák, MSc ETH Geomatik-Ing.
- Thomas Frank, Dipl. Bau-Ing. ETH
- Christoph Tanner, Dipl. Arch. FH

3D Model of 29 terrestrial and three airborne images

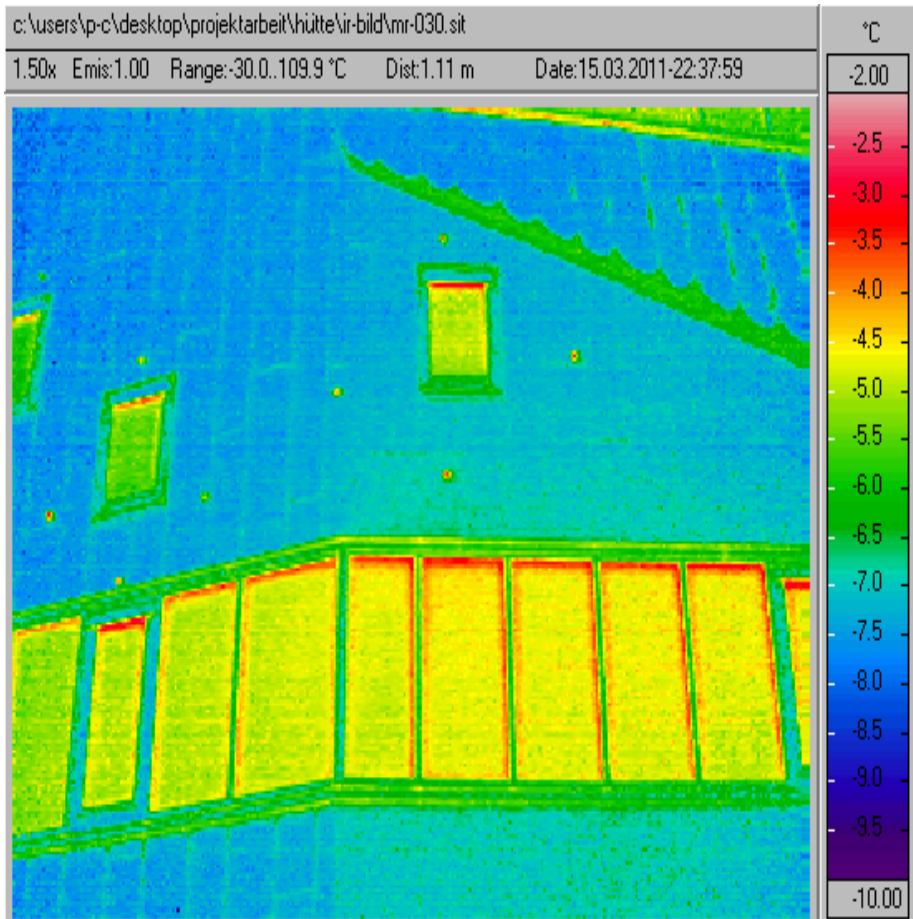


Octocopter Falcon 8

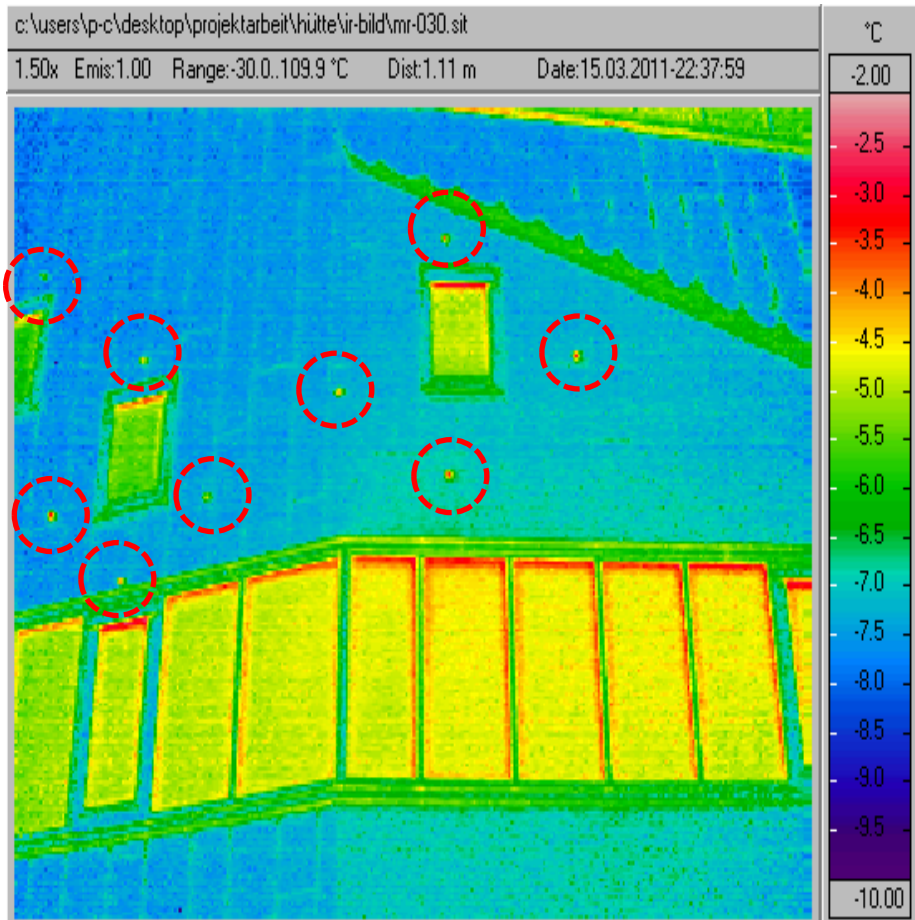
- High-altitude → air density + temperature
- Thermography → nightflight



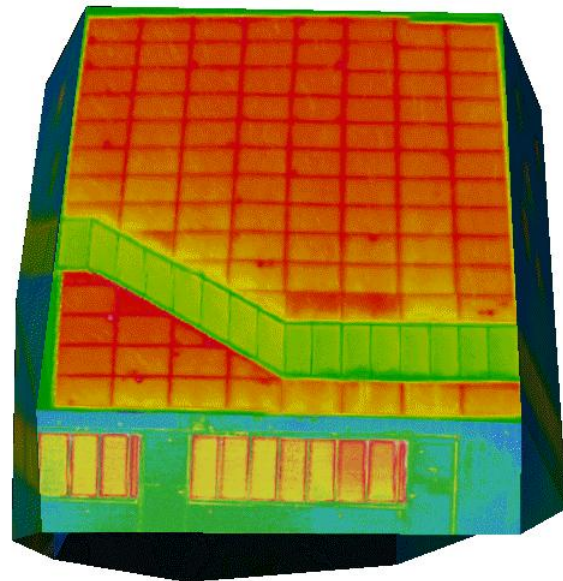
Tie points: hand warmers



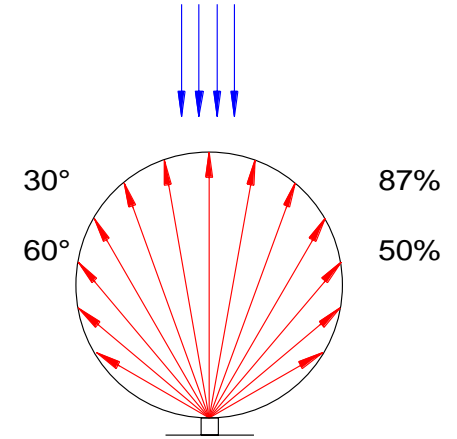
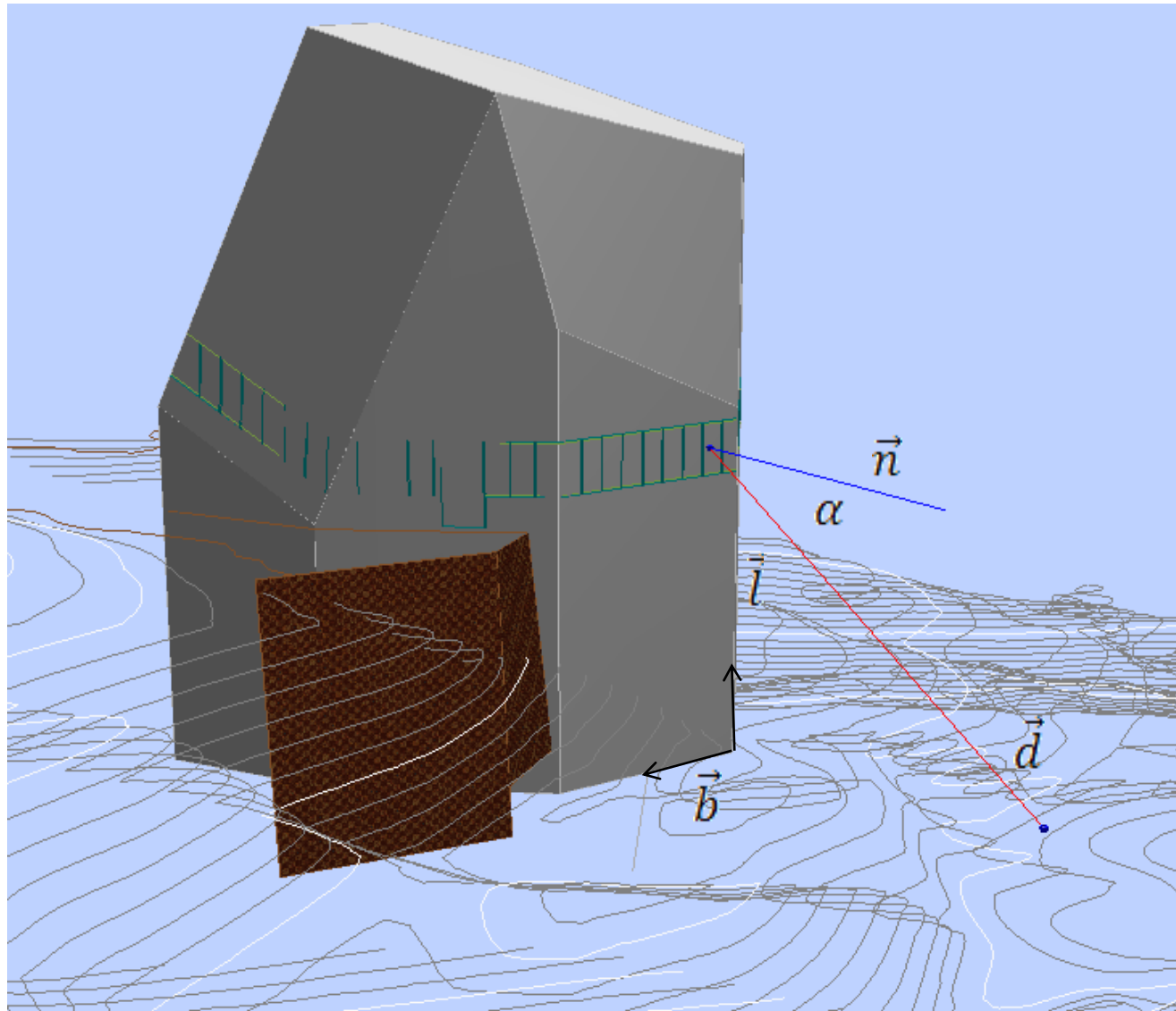
Tie points: hand warmers



Results: RMSE of 0.45 pixel \cong 1.5 cm



Photogrammetry ↔ Thermography



$$\vec{n} = \vec{l} \times \vec{b}$$

$$\cos \alpha = \frac{\vec{n} \cdot \vec{d}}{|\vec{n}| \cdot |\vec{d}|}$$

Thank you for your attention!

