



Autonomous Multirotor Landing on Landing Pads and Lava Flows

Joshua Springer

30 November 2022

Reykjavik University

Department of Computer Science

Supervisor: Marcel Kyas

Topic Overview

- ▶ Autonomous drone landing: hard, needs to be precise
- ▶ Often depends on GPS, blind to obstacles
- ▶ Often needs to be more precise than GPS (or GPS-denied)
- ▶ Landing pads: fiducial markers
- ▶ Terrain relative navigation

Landing Pads with Fiducial Markers

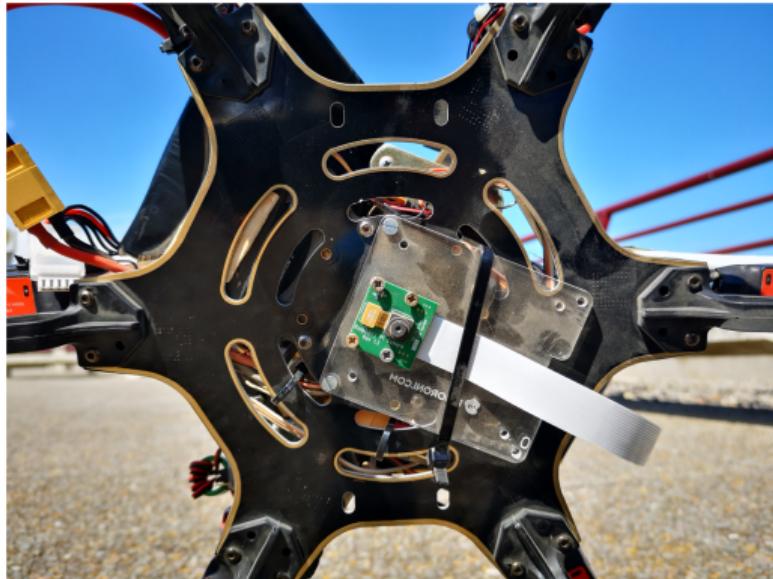
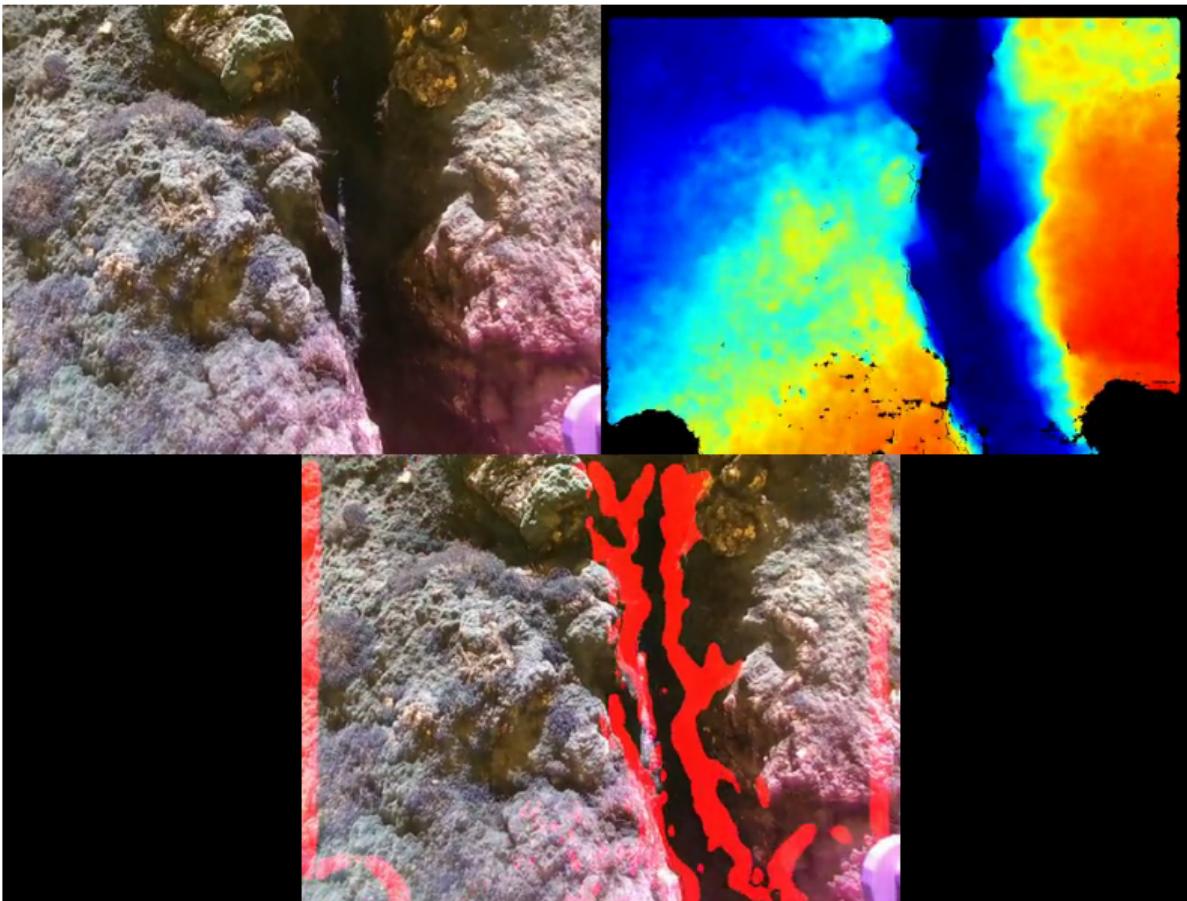


Figure 1: Classic, downward-facing, fixed camera. [1]

- ▶ Fixed, downward-facing camera paradigm
- ▶ Loses sight of the landing pad in adverse conditions (e.g. wind)

Example Depth Image Processing



References

- ▶ Jamie Wubben, Francisco Fabra, Carlos Calafate, Tomasz Krzeszowski, Johann Marquez-Barja, Juan-Carlos Cano, and Pietro Manzoni.
Accurate Landing of Unmanned Aerial Vehicles Using Ground Pattern Recognition.
Electronics, 8:1532, 12 2019.