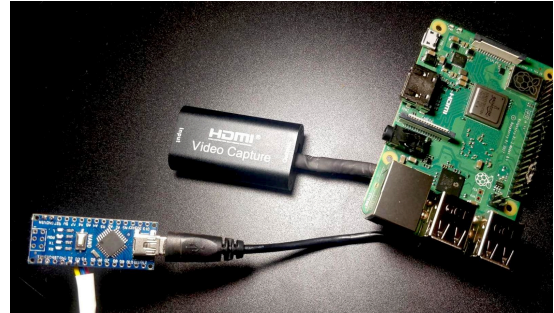
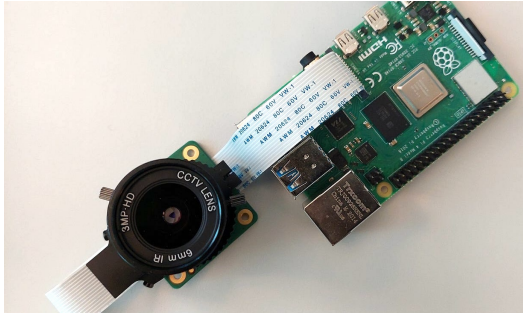


# Master Thesis Topic: Visual Flow Capture via Programmable Raspberry Pi Cameras



*Thesis proposal from the Physics-based Simulation Group of Prof. N. Thuerey*

#fluids #RPi #reconstruction #numerical-simulation



## Overview

With a previous project, the ScalarFlow dataset, we created a first large-scale data set of reconstructions of real-world smoke plumes. It used an accurate physics-based reconstruction from a small number of video streams. Central components of our framework were a novel estimation of unseen inflow regions and an efficient optimization scheme constrained by a simulation to capture real-world fluids. The published data set contains volumetric reconstructions of velocity and density as well as the corresponding input image sequences.

One of the key properties of this project that it used low-cost hardware in the form of a Raspberry Pi cameras. As this work was originally performed in 2017 and 2018, the hardware has advanced significantly since then. The goal of this master thesis will be to re-create a capturing setup based on the latest Raspberry Pi 5 hardware. Especially the computer vision focused “CS mount” camera of the current RPi generation promises very interesting capabilities to improve the quality of the flow captures. As a next step, the goal of the thesis will be to evaluate the accuracy improvements gained from the capture setup.

Get in touch if you're interested!

[i15ge@cs.tum.edu](mailto:i15ge@cs.tum.edu)

