

# Spatial Super-Resolution of Light Field Video

Balakumaran Palanivel

Master of Science in Computer Science

University of Dublin, Trinity College, 2018

Supervisor: Michael Manzke

This thesis is a comprehensive feasibility study of the light field video technology using acquisition hardware which is portable enough to be mounted on an aerial platform. It studies various issues in capturing light field video using this platform and focuses on solving the problem of low spatial resolution of the video. It analyses in detail an existing state of the art method to produce light field video and proposes a modification to achieve spatial super-resolution thus enhancing the overall video quality. To achieve this, different spatial super-resolution techniques for light field images are weighed against each other and the best fit to be incorporated into the existing video generation pipeline is determined. Two of these techniques are implemented with necessary modification to work with the light field video pipeline and its results are discussed. This thesis also includes detailed background study on the relevance of a light field and light field video. The problems and benefits of having a portable device capable of generating light field video are also discussed from the perspective of aerial photography platforms.