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# **Characterizing holographic displays via numerical simulations - Report**

April 2019

# Abstract

Roosa Kuusivaara & Väinö-Waltteri Granat: Characterizing holographic displays via numerical simulations - Report

Laboratory Report

Tampere University

Master's Degree Programme in Software Development

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The abstract is a concise 1-page description of the work: what was the problem, what was done, and what are the results. Do not include charts or tables in the abstract.

These instructions are intended for students of Computer Sciences at the Tampere University. They cover questions of writing a thesis, such as use of the literature, structure of the thesis and style, the external appearance of the thesis and the use of tools. These instructions do not cover the scientific content of the thesis.

**Keywords:** M.Sc. thesis, layout, writing style.

The originality of this thesis has been checked using the Turnitin Originality Check service.

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# **1 Introduction**

In this report we describe our work with the ‘Characterizing holographic displays via numerical simulations’ exercise, for the Advanced Signal Processing Laboratory Course.

In this project we familiarized ourselves with the basics of holographic display, by implementing a part of a holographic display viewing simulation.

## **1.1 Hologram synthesis**

## **1.2 Retinal Image Formation**

## 2 Methodology

### 2.1 Implementing Hologram Synthesis

Our implementation of the holographic image viewer included 3 different methods of holographic image synthesis, one of which was provided in the code base given to us. The ready made synthesis method was holographic stereograph synthesis, which [TODO: explain hss here]. The first synthesis method we implemented was a Fresnel hologram syntheis which, [TODO: explain Fresnel here]. The second method we implemented was Rayleigh-Sommerfeld synthesis which, [TODO. explain RSS here].

### 2.2 Field Propagation

## 3 Results

## 4 Conclusions