

# Abstract

At film or commercial shoots sometimes it is not enough to keep the camera in one place. In this case cameras are usually moved on rails or by hand, however nowadays it is more and more common to use a so called 'cinebot'. This is a robotic arm with a camera attached to its end. With this system you can not only move the camera faster and more precisely, but also replicate the same movement multiple times.

The goal of this thesis is to make a smaller version of this video recorder robotic arm. The task of this system is design a path for the movement of the camera and move the camera on that path afterwards. Another feature is to be able to recognize an image and change the orientation of the camera so that the image does not move out of frame.

Firstly, I will explain how we can represent the robotic arm, movement and coordinate systems with matrices. Topics include the algorithms of path planning, solving inverse kinematics with a numerical method and image recognition using the SURF method which were used in MATLAB. I also write about selecting the hardware components, the control electronics of the servomotors and the software I wrote.