**Expose:**

The main purpose of medical professionals is to treat patients but over the years the documentation burden of medical professionals has dramatically increased.**{Beleg?}** Documenting the patient history is of cause important for future treatments and to establish a history of responsibility for every diagnosis and treatment. But if we could reduce the time of medical professionals spend on administrative tasks we would increase the time spend with patients and the number of treated patients by each medical professional. **{Detailierte pro patient time?}**

This work is trying to address a small part of this set of problems.**{hört sich komish an!}** Currently after analysing the blood flow in the aorta and diagnosing either some kind of disease or the absence of the same, a medical professional**{welche art von doc?}** has to document his findings in the patients document.**{wo genau?}** But since the aorta flow data is a 4D dataset consisting of 3D objects changing over time. It is time consuming to find a viewpoint and a fitting point in time so that a snapshot would accurately document the findings.

Automating the process of finding a medically interesting time point and choosing a desirable camera position to capture the disease typical abnormality is subject of this work. The first step in achieving this is to build the capability to visualize the dataset and to explore it with a free moving camera controlled by mouse and keyboard as well as implementing an efficient way to step through the different time points. Furthermore the visualisation should be able to swap between the different data modi **{welche da wären?}**.

The second step is to identify interesting time points for each imaging modality. By for instance choosing the time step with the highest Aorta wall pressures????**{Was macht eine stele interessant???}.**

The third step is to find a suitable camera position at a given time point to document the 3D object and to display important blood flow behaviour. In a first processing step a rough camera position will be determined via analytical analysis of the 3d object. This could be done by utalizing a PCA which can identify the first 2 Basis vectors, if we now place the camera orthogonal to the plane created by the basis vectors we should directly point at the most interesting part of the object. A first approximation of the distance for the camera could be done calculating a z coordinate of the mentioned plane that would still make it possible to view all pixel with a given field of view. From this rough position imaged based analyse methods **{was für welche?}** will then fine tune the camera position to its final point.

After combining the camera position algorithm with the time point algorithm we will be able to create snapshots of hopefully medically relevant parts of the 4D Dataset. But to know if the found snapshots can compete with the snapshots that a medical professional would choose our solution hast to be evaluated.

We propose a two part evaluation scheme. In the first part a group people familiar with medical imaging will be presented with the visualisation of the 4D data and they will be tasked to a find medically interesting time point and camera position using a keyboard and mouse driven free floating camera. The performance of the automatic found camera position will be evaluated by a distance measure between the position found by the test group and the automatically determined position.

In the second part the test group will presented snapshots determined automatically and snapshots at random time points and at random camera position of the same dataset. The test group has then to decide which snapshot would capture a better summery of the relevant information. To be call the automatic camera position project a success significantly more people from the test group have to choose the automatically generated snapshots then the random ones compared to random choice.

**{schlussworte?}**