Context of the project:

In order to improve performances after an implant, patient specific prosthesis represent a valid tool. To proper design such implant it is required to implement in a virtual environment the femoral and tibial bone of the patient (figure 1) as references. Subject-specific knee geometries are usually based on CT and MRI images reconstruction, but these techniques present issues regarding high cost and radiation dose applied to the patient; for the foretold reasons, then, they cannot be considered a generally valid approach [1]. A radiograph is instead a common imaging technique available in almost in every hospital complex and requires lower budgets.

The aim of the thesis is thus to develop a procedure allowing the generation of a patient specific model (consisting in tibial and femoral bone) starting from clinical long leg radiographs.

Once the procedure is defined, validation will be performed comparing the so obtained volume with the one determined by CT.

Figure 1: A patient specific knee model

Reference: