POST-DOCT POSITION PROPOSAL

3D Reconstruction and Synthesis of bone structures

PURPOSE:

Building bone grafts using 3D printing of bioceramics by mimicking trabecular bone.

PRESENTATION OF THE SUBJECT:

MimOsA is a project funded by Nouvelle Aquitaine within its call for research project in 2020. XLIM (Poitiers part), IRCER (Limoges) and PPRIME (Poitiers) institutes are involved in this project, which aims at building bone grafts using 3D printing of bioceramics by mimicking trabecular bone.

XLIM's contribution to this project consists in two main tasks: first the building of an existing structure using segmentation and reconstruction and, second, the synthesis of bone structure using procedural modeling.

In a first step, it is expected to build a 3D model from images of trabecular bone acquired by tomography and, moreover, characterize and correct its topology in order to make it printable,

In a second step, it is intended to design a method to build a structure, similar to actual trabecular bones, with regards to the topology and the statistical distribution of matter observed in the first step. This step will rely on procedural modeling using the JERBOA plateform, a modeling tool designed at XLIM lab for nearly a decade.

ENVIRONNEMENT:

- The main part of the study will be carried out at the XLIM laboratory, Poitiers site, SP2MI/H1 building, Futuroscope.
- The project will start in spring 2021 (March), for a duration of 12 months renewable 6 months.
- The amount of the gross salary: 2660 € gross/month.

EXPECTED THEORETICAL AND EXPERIMENTAL COMPETENCES:

- Geometric modeling
- Java programming
- Segmentation (if possible)
- 3D reconstruction (if possible)

SKILLS:

- Doctor with a thesis in Computer Graphics
- Autonomy, reactivity, rigour, analysis, team spirit and listening
- Technical English language skills

CONTACT:

- XLIM – Philippe Meseure– Philippe.Meseure@univ-poitiers.fr