

POSTDOCTORAL POSITION

UTC (Université de Technologie de Compiègne) and the CNRS Joint Research Unit UMR CNRS 7338 Biomechanics and Bioengineering (BMBI) is seeking a researcher to undertake a 18 months research postdoctoral project starting from September-October 2026.

Postdoctoral project: Biomechanics modelling of facial muscle

Keywords: Digital twin of the face, Finite Element Modelling, multiscale mechanical behavior, muscle, multimodalities MRI data

Supervisors : Prof. Marie-Christine Ho Ba Tho (BMBI, UTC) and co supervisors Prof. Tien-Tuan Dao (LaMcube, Centrale Lille Institut) and Olfa Trabelsi (BMBI, UTC)

Context:

The postdoctoral project topic is part of the multidisciplinary PREDIT4FACE project, which was selected within the PEPR Digital Health Call for Projects under France 2030¹. PREDIT4FACE (**PRE**dictive **DI**gital **T**wins for **FAC**ial **E**xpression) aims to develop a multiscale predictive digital twin of the face to better understand, model, and rehabilitate facial expressions. The project is led by the BMBI laboratory (UTC-CNRS) and brings together a multidisciplinary consortium with the following partners: CHIMERE (UPJV-CHU Amiens, INSERM), LaMcube (Centrale Lille Institut, CNRS), LATIM (IMT Atlantique, INSERM), and Roberval (UTC).

The objectives are to develop and implement a multi-scale constitutive law for facial soft tissues during facial expressions. This novel constitutive law incorporates the physical constraints related to the different modes of facial muscle contraction (longitudinal and circumferential). Multimodal medical imaging (static MRI, dynamic MRI, diffusion tensor imaging) will be used for calibration and identification of appropriate laws and parameters associated with the passive and active behaviors of facial muscles.

Profile: PhD in the following field: Biomechanics/Mechanics, Bioengineering, Biomedical engineering

The candidate needs have the following experiences:

- Strong theoretical and practical knowledge of the finite element method
- Experience in soft tissue characterization using medical imaging
- Experience in inverse methods for parameter identification
- Experience in Python and Fortran programming
- Analytical and critical thinking skills, autonomy, and initiative
- Excellent scientific communication skills and ability to work with multidisciplinary teams

Documents required to apply : Send to hobatho@utc.fr, tien-tuan.dao@centraledlille.fr, olfa.trabelsi@utc.fr the following documents (in a single pdf file) : Curriculum vitae, Motivation letter, 1-2 Papers related to your previous works, 2 Recommendation letter(s)

For more information, please contact: hobatho@utc.fr, tien-tuan.dao@centraledlille.fr, olfa.trabelsi@utc.fr

¹ <https://www.hauts-de-france.cnrs.fr/fr/cnrsinfo/predit4face-laureat-de-lappel-projets-du-pepr-sante-numerique>