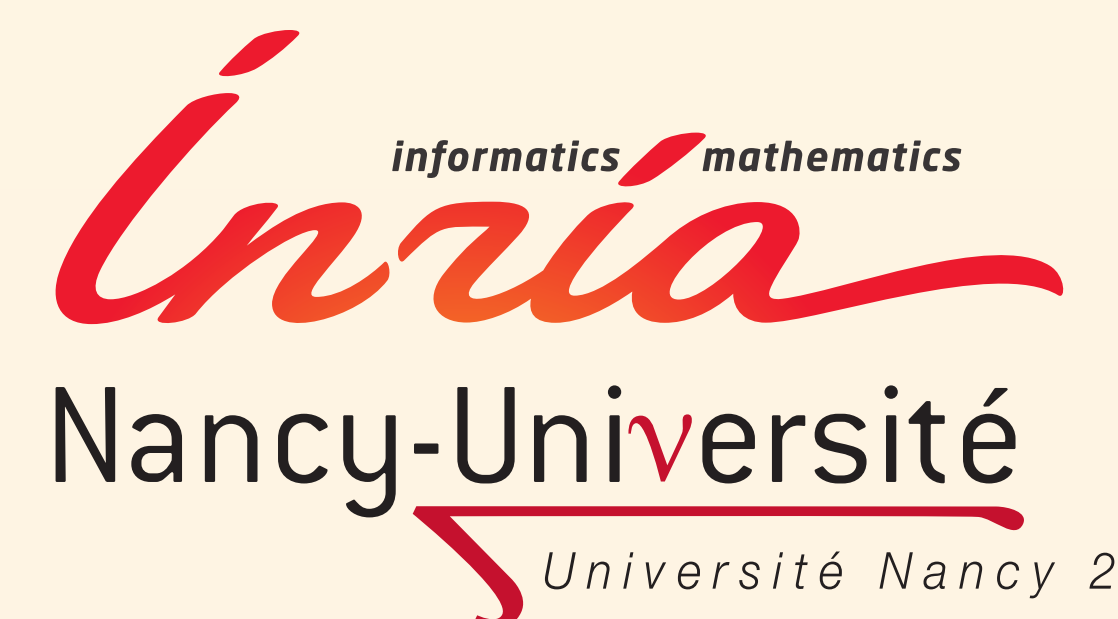


Progress in animation of an EMA-controlled tongue model for acoustic-visual speech synthesis

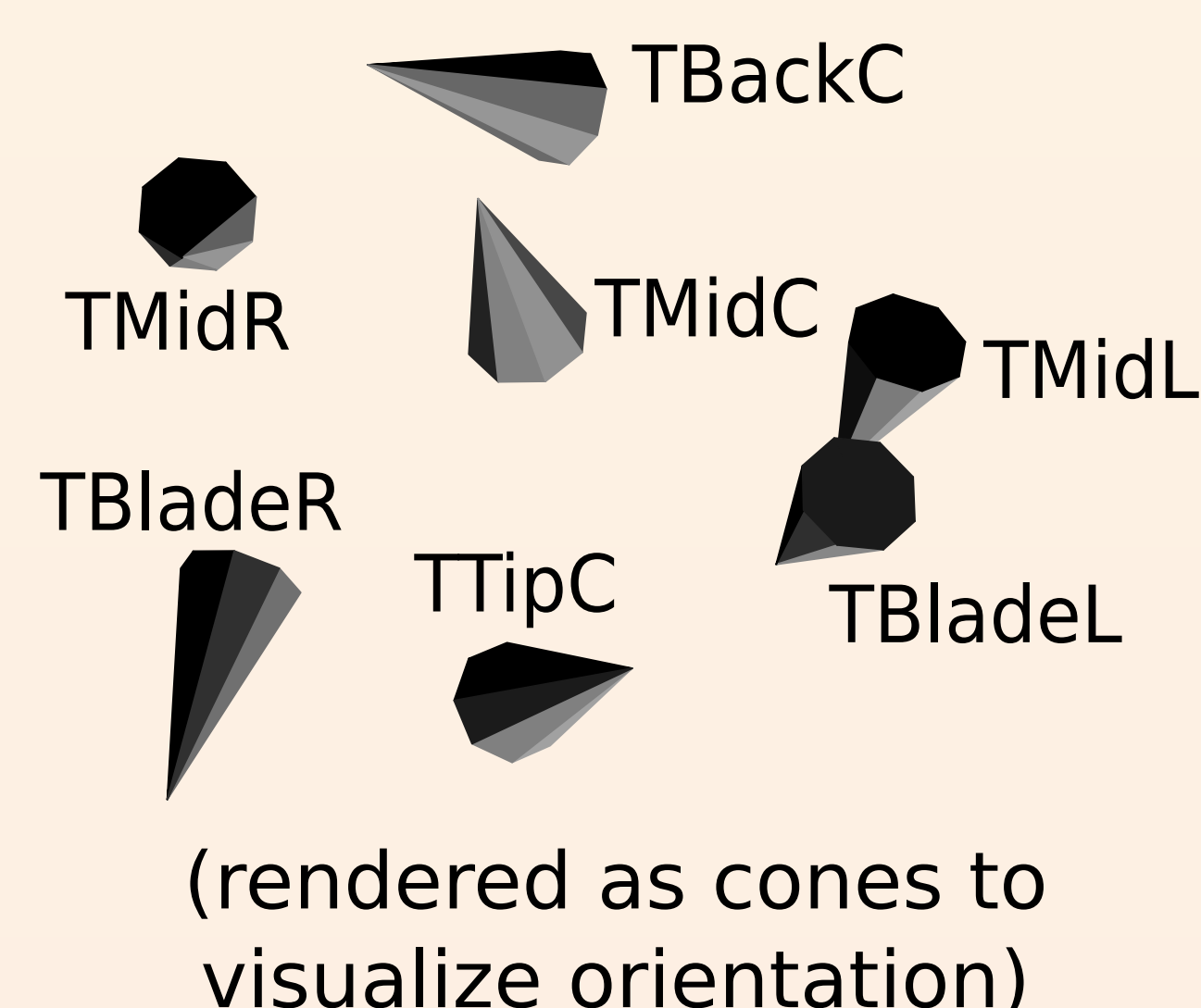
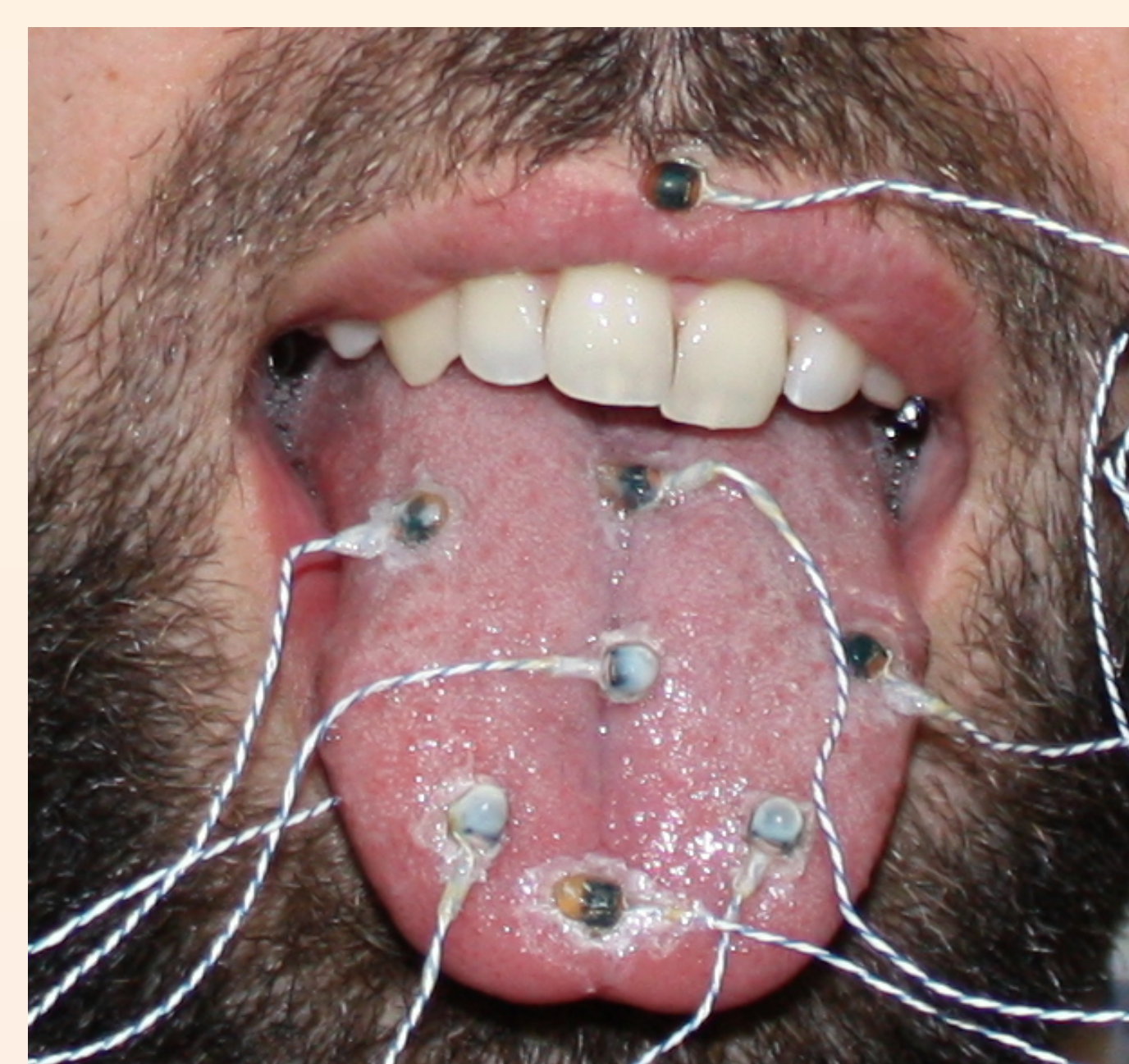


Ingmar Steiner^{1,2}, Slim Ouni^{1,3}
¹LORIA Speech Group, ²INRIA, ³Université Nancy 2
Firstname.Lastname@loria.fr



Abstract: As one component of the talking head of an acoustic-visual speech synthesizer, we present a technique to animate a 3D kinematic tongue model, based on volumetric vocal tract MRI data, using skeletal animation with a flexible rig, controlled by motion capture data acquired with EMA, and implemented with off-the-shelf, open-source software.

EMA data for tongue model kinematics

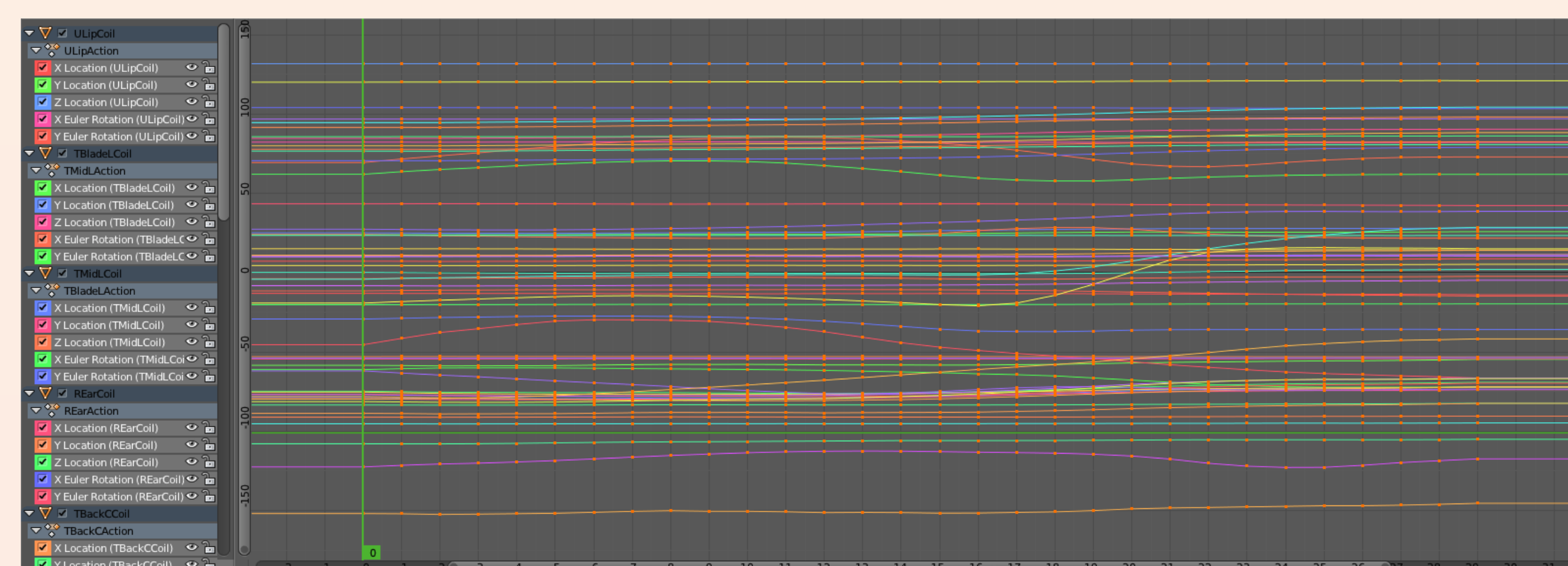


EMA coil layout for pilot corpus recorded with Carstens AG500

MRI data for tongue model mesh



Volumetric MRI scan of sustained [ɑ:] from *mngu0* corpus (<http://mngu0.org/>)
The tongue model mesh is obtained from the isosurface of the segmented tongue.



EMA data in blender

The EMA coils serve as transformation targets for the tongue model rig, which is controlled using inverse kinematics and volumetric constraints. Articulatory gestures can be compiled into *actions* for non-linear animation and coarticulation modeling.

Animation example: [ɑ:] → [t] transition (from repetitive CV utterance)

