

Digital and Hybrid Twins of Human Models

Francisco (Paco) CHINESTA

francisco.Chinesta@esi-group.com & francisco.Chinesta@ensam.eu

Elias CUETO & Jean Louis DUVAL

OUTLINE

- I - Interactivity
- II - Patient specific
- III - Twining

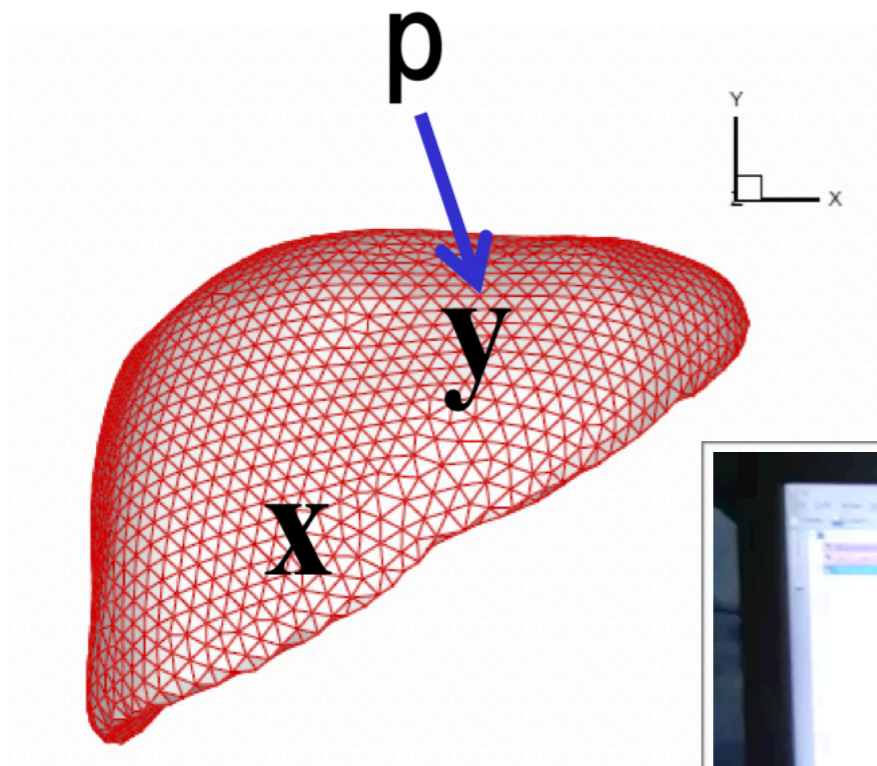


Universidad
Zaragoza

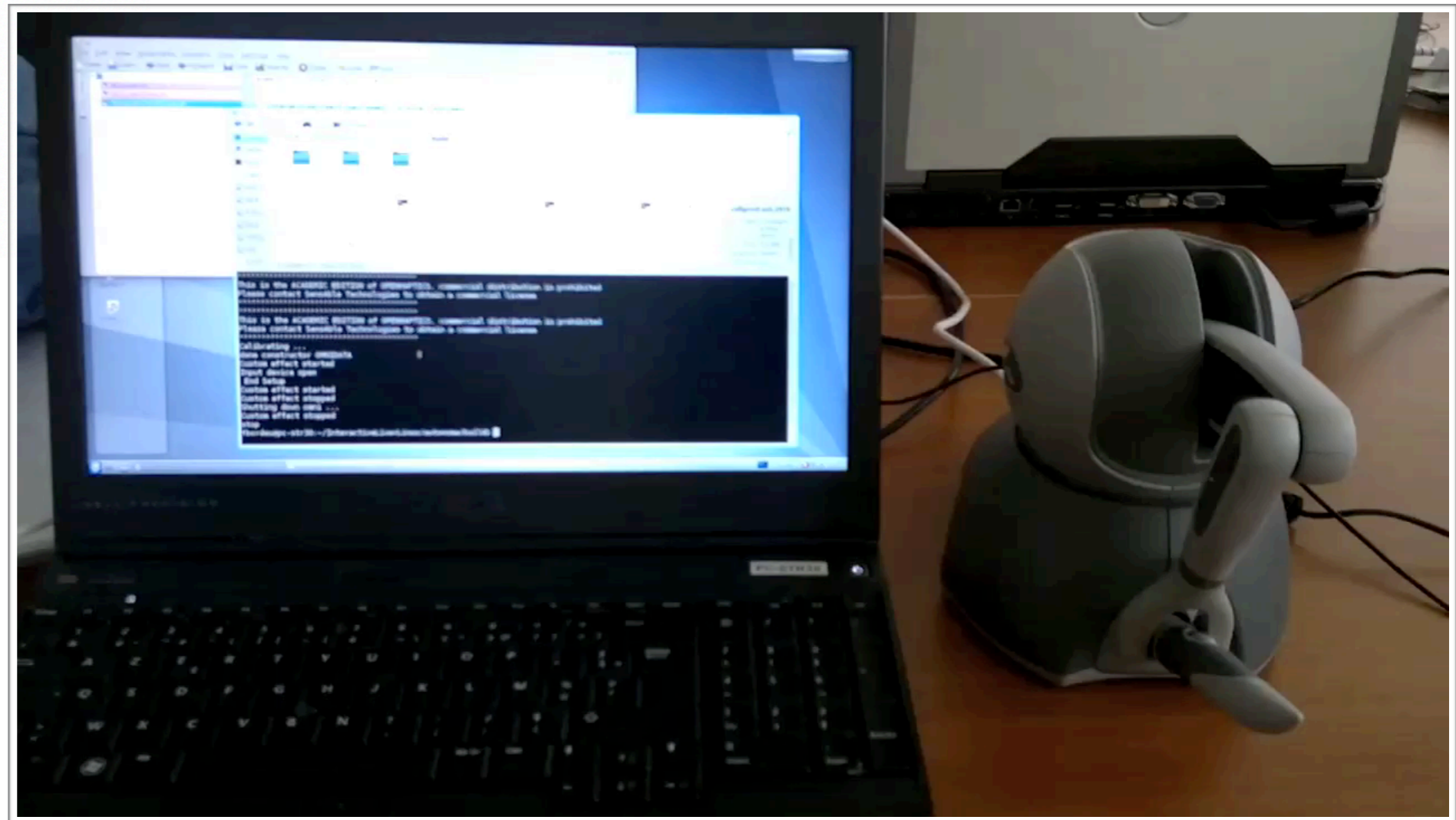


Arts et Métiers Institute of
Technology

I - Interactivity



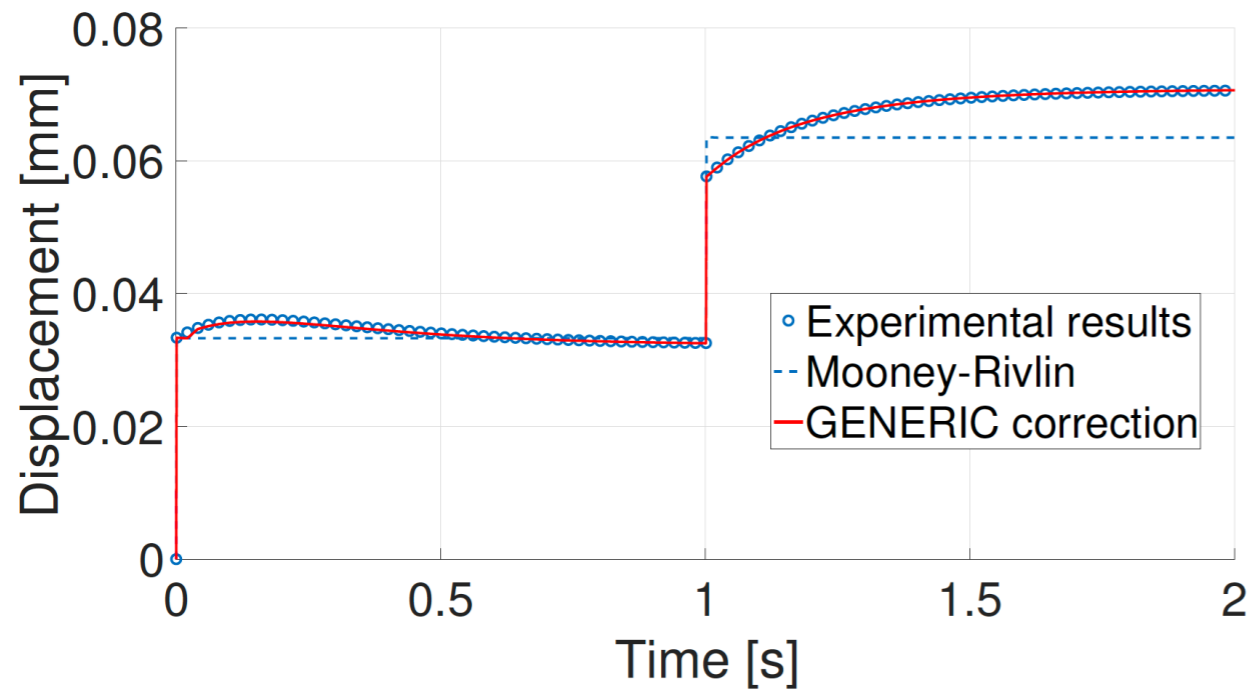
$$\mathbf{u}(\mathbf{x}, \mathbf{y}, \mathbf{p}) = \sum_i \mathbf{X}_i(\mathbf{x}) \circ \mathbf{Y}_i(\mathbf{y}) \circ \mathbf{P}_i(\mathbf{p})$$



II - Patient specific

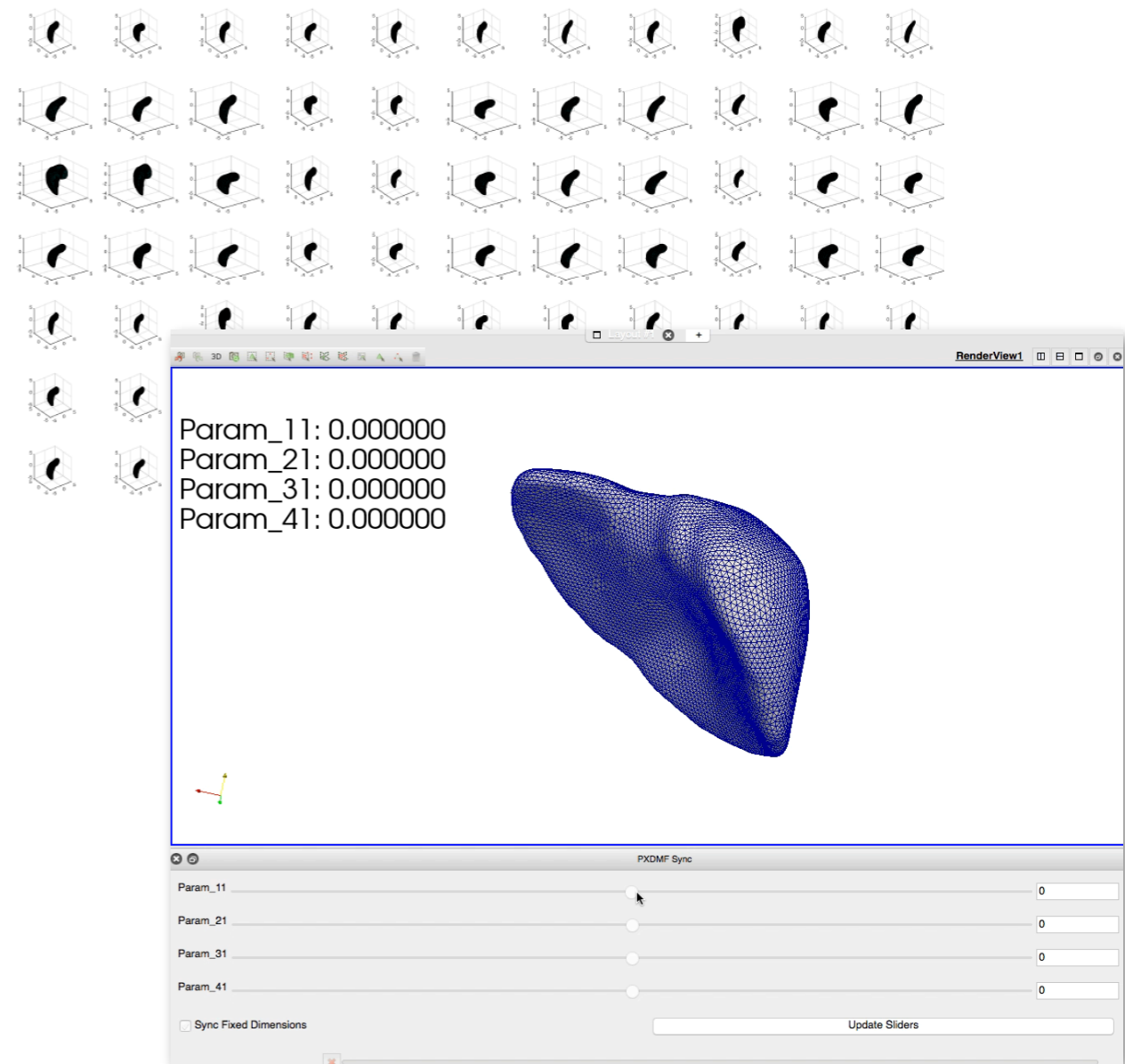
Constitutive models

Visco-hyper-elasticity as a data-driven-correction (thermodynamically consistent) of a purely-hyper-elasticity



Shape

Manifold Learning based shape description



III - Twinning

Physics-aware interaction between virtual and physical objects in Mixed Reality

A. Badías, D. González, I. Alfaro, F. Chinesta, E. Cueto



Universidad
Zaragoza

unizar.es