

Haptic simulation of bone dissection

**Marco Agus, Andrea Giachetti, Enrico Gobbetti,
Gianluigi Zanetti, and Antonio Zorcolo**

CRS4, Cagliari, Italy.

WWW: <http://www.crs4.it/vvr>

E-mail: {magus,giach,gobbetti,zag,zarco}@crs4.it

Bone dissection is an important component of many surgical procedures. We discuss a haptic implementation of a bone cutting burr, that it is being developed as a component of a training system for temporal bone surgery. We use a physically motivated model to describe the burr–bone interaction process. The model includes haptic forces evaluation, the bone erosion process and the resulting debris. The current implementation, directly operating on a voxel discretization of patient–specific 3D imaging data, is efficient enough to provide real–time feedback on a low end multi processing PC platform. This research is supported by the IERAPSI project (EU–IST–1999–12175), funded under the European IST programme (Information Society Technologies).