

# Combined Multibody and Finite Element Simulation Using ArtiSynth

## *ArtiSynth*

ArtiSynth is a free, open source 3D modeling system developed at the University of British Columbia that combines multibody and finite element (FEM) simulation capabilities, including contact and constraints. It provides a highly interactive platform that lets users view and inspect their models while simultaneously running them. It is currently being used by a diverse set of research groups for a variety of applications including musculo-skeletal modeling of the foot, lower limb, spinal region, arm, and shoulder; function modeling of swallowing, mastication and speech; and preliminary studies of surgical treatment planning involving the head and neck region. This workshop will provide an overview of ArtiSynth and its capabilities, combined with a hands-on tutorial in which attendees can evaluate how it may be used to further their research goals. Specific use cases will be presented to provide concrete illustrations of how it may be used. Attendees will be able to download ArtiSynth and experiment with it beforehand, and we will be available to answer any specific questions that they may have. ArtiSynth models are primarily implemented using the Java programming language, providing users with a very powerful means to assemble complex and detailed models containing highly customized components and methods. Complete information about ArtiSynth, along with instructions for installing and using it, is available at [www.artisynth.org](http://www.artisynth.org).