ANGIOTK: An Open Platform to reconstruct vessels from MRI images and simulate blood flows to ultimately provide Virtual Angiographies

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To cite this version:

Vincent Chabannes, Alexandre Ancel, Julien Jomier, Christophe Prud’Homme. ANGIOTK: An Open Platform to reconstruct vessels from MRI images and simulate blood flows to ultimately provide Virtual Angiographies. Rencontre Inria Industrie Santé, Oct 2015, Bordeaux, France. 2015. <hal-01220397>

HAL Id: hal-01220397
https://hal.archives-ouvertes.fr/hal-01220397
Submitted on 28 Oct 2015

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ANGIOTK

An Open Platform to reconstruct vessels from MRI images and simulate blood flows to ultimately provide Virtual Angiographies

The platform is still a prototype, but reached a level of maturity that requires very little human intervention. The overall objective is to make available, to the medical community, tools for computer aided modeling for conducting experiments in silico, otherwise difficult or impossible to carry on patients.

A specific aim is to create an ecosystem around the platform composed of academic, research centers and enterprises and to provide services such as training, specific developments, consulting or deployment.

The platform is operated by Cemosis and Kitware.

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Rencontres INRIA-Industries Santé, Bordeaux, Oct. 13 2015
ANGIOTK
A Software Pipeline

We have developed the open-source platform AngioTK that implements the complete pipeline using the following open-source software

Imaging: VTK & ITK http://www.itk.org
Filtering: RORPO http://path-openings.github.io/RORPO/
Extraction: VMTK http://www.vmtk.org/
Mesh Generation: GMSH http://geuz.org/gmsh
Blood Simulations: Feel++ http://www.feelpp.org
MRI Simulations: JEMRIS http://www.jemris.org
Development https://github.com/vivabrain/angiotk
Forum https://gitter.im/vivabrain/angiotk
Open-Source License BSD

FEEL++
A Framework for Numerical Simulations

Feel++ is an open-source C++ library dedicated to solve partial differential equations using a language very close to the mathematics embedded in C++. Its features include:

- arbitrary order Galerkin methods from 1D to 3D
- various finite elements $H^1, H^2, H(div), H(curl)$
- seamless parallel computing
- scale up to tens of thousands of cores
- In-Situ Visualisation

Website http://www.feelpp.org
Development https://github.com/feelpp/feelpp
Forum https://gitter.im/feelpp/feelpp

VIVABRAIN CONSORTIUM
Funded by ANR

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Funding