



From MICCAI Algorithms to Clinical Translational Tools: The NA-MIC Platform

MICCAI 2010 Tutorial, September 20, 2010 – Beijing, China
Tutorial Notes (Draft)

Outline

MICCAI offers a window into the latest scientific achievements in medical image computing and computer assisted interventions which will lead to the next generation of technological breakthroughs for improved clinical care. A critical step to maximize the long-term positive impact of MICCAI cutting-edge algorithms is to enable their deployment, validation and concrete use by the clinical research community for whom they were developed.

For the past six years, the National Alliance for Medical Image Computing (NA-MIC), one of the seven National Centers for Biomedical Computing (NCBC), part of the NIH Roadmap for medical research, has focused its efforts on the conversion of scientific advances from the biomedical imaging community into open-source resources for users and developers, in order to improve the availability and deployment of advanced software tools on a national and international scale.

The objective of the tutorial is to introduce the challenges inherent in delivering advanced medical imaging technologies to end-users for clinical translational research. The tutorial provides open source, freely available solutions to these challenges and presents multiple examples of clinical research projects that have been recently completed or that are underway.

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Program

The tutorial consists of lectures and an optional instructor-led hands-on session with the participants programming on their own laptop computers. A technical training staff will be providing one-on-one assistance as needed.

8:45 - 9:00 am	Introduction and goals of the workshop
9:00 - 9:15 am	Overview of the National Alliance for Medical Image Computing (NA-MIC) (Kikinis)
9:15 - 9:45 am	The NA-MIC Programming Environment (Pujol)
9:45 - 10:15 am	Hardening your software with the NA-MIC kit, regression tests and dashboard (Aylward/Tao)
10:15 - 10:30 am	Morning Tea/Coffee Break
10:30 - 11:00 am	Building bridges between complementary medical image analysis platforms (e.g. BRAINS2, HAMMER, FreeSurfer) (Pujol)
11:00 - 11:30 am	How to participate in NA-MIC: collaboration grants, user and developer community (Kikinis)
11:30 - 12:30 pm	Lunch
12:30 - 3:15 pm	Exemplar Clinical Research Applications
12:30 - 1:00 pm	- Image Registration (Dinggang Shen)
1:00 - 1:30 pm	- Cortical Thickness Measurements (Styner)
1:30 - 2:00 pm	- EM Segmentation (Gerig/Pohl)
2:00 - 2:30 pm	- Diffusion Tensor Imaging (Gerig/Pujol/Styner)
2:30 - 3:00 pm	- Image-Guided Therapy (Hata)
3:00 - 3:15 pm	Afternoon Tea/Coffee Break
3:15 - 3:45 pm	Other examples from the community (Kikinis)
3:45 - 5:15 pm	Optional Hands-on Session: Interfacing your MICCAI algorithm with the NA-MIC open-source toolkit: the 'Hello Python' tutorial (Pujol)
5:15 - 6:00 pm	Open discussion and one-on-one consultations for individual projects

National Alliance for Medical Image Computing

<http://www.na-mic.org/>

3D Slicer software

www.slicer.org