GIMIAS

Graphical Interface for Medical Image Analysis and Simulation

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Outline

- General introduction: what is GIMIAS?
- Timeline: where are we now?
- Open Source model: which parts of GIMIAS are public?
- Questions
• Fast
• Allow team work
• No license restrictions

Integration

Medical Application

Different (teams of) researchers contribute to the same application

Zmd
Zfem2stl
Remesh
stl2vtk
geoZernikeMoments

IEEE TRANSACTIONS ON MEDICAL IMAGING
GIMIAS Application Core

C++ (Windows and Linux compilers)
Visualization based on VTK and MITK
Image processing based on ITK
Graphical interface based on wxWidgets
Remote database access

GRID computation

GIMIAS Application Core

Scripting

Data Sharing

Report generation
GIMIAS Application Core

DICOM Plugin

Mesh Plugin

Angio Plugin
Your application
Plugins
Widgets
Data List
Data sharing

Mesh Editing Plugin

Data List
- Images
  - anImage1
  - anImage2
- Meshes
  - aVolume
  - aSurface
- Models
  - aModel
- Other Data Types
  - aDataEntity

DICOM Plugin

Angio Segmentation Plugin
GIMIAS Core

class DataList

class DataListWidget

subset

class WorkingData

synchronize

class SceneView

Plugin

class Widget

- Object 1
- Object 2
- Object 3
- Object 4
- Object 5

- Object 6
- Object 7
- Object 8
How your WorkingData is processed

1. Class YourPlugin
2. WorkingData
3. Input image
4. Output mesh
5. Class YourProcessor
6. Event
7. Class YourWidget
8. Call
9. Class YourAPI
Complexity of the objects

- **Simple**
  - class WorkingData
  - class Processor
    - Requires: passing data to the API, calling NotifyObservers()

- **Intermediate**
  - class Widget
    - Requires: UpdateWidget(), UpdateWorkingData(), Validate()
    - Future work: automatic code generation

- **Complex**
  - class SceneView
    - Usually requires: interactors
    - Future work: simplify C++ interface
GIMIAS - Timeline

- Oct-07: Started the wx Porting and architecture redesign
- Jul-08: First GIMIAS Open-source mayor beta-release
- Jan-09: GIMIAS Open-source Update-release
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- GIMIAS webpage
- SVN repository
- Plugins:
  - Standard sandbox plugin
  - DICOM plugin
  - View plugin
  - Segmentation plugin
Second release:
- Updates on the previously released features (software, webpage, documentation, etc)
- Developers manual: mature version
- Mesh Editing plugin
- We expect to have releases every 6 months.
GIMIAS - Timeline

Future work:
• Scripting
• (Remote) databases
• Distributed (GRID) computing
• Report generation
Open source model

- GIMIAS open source part
  - BSD License
- GIMIAS close source part
  - Proprietary technology of the CISTIB and partners
- Open source part includes:
  - Ability to integrate your Widgets, SceneViews, Processors etc
  - Basic services, such as scripting, database access, report generation
  - DICOM Plugin
  - Functionalities built on public source
    - Segmentation plugin: itkConnectedThreshold
    - Meshing plugin: Netgen meshing library
More information?

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Or visit the GIMIAS webpage

www.gimias.org