AdessoWiki

The Executable Wiki for Scientific Programming

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AdessoWiki

- Concept
  - It is a wiki, where the programming code can be embedded in the text. It is executed in the server when the page is rendered updating images, figures and output text.

- **Documents or Applications**
  - Centralized;
  - Collaborative;
  - Executable

Collaborative executable documents

- Collaborative Structured Text (like wiki)
- Allows the insertion of small parts of code (currently Python, C++) in the text. The graphics, plots, images are displayed as figures in the document
- Documents can be converted to:
  - PDF
  - Slide show
  - HTML
  - RTF (Word for Windows)

Advantages

- No software installation or configuration
- The client requires just a web browser
- Collaborative as any wiki
- Centralized server and application. New versions are easier to make and mantain
- Centralized data base of images
- Usually, a professor has the software knowledge spread among the notebooks of its students. AdessoWiki integrates and keeps the algorithms and implementation knowledge constantly available

Possible scenarios

- Teaching
  - Wiki, Code and Data - scientific programming
  - Environment for collaborative coding and documentation
- Research
  - Scientific report, paper, thesis
  - All information in one place and synchronized
- Solution development
  - Client and developers in a collaborative work

Teaching

- Easy to verify if the code works
- Possible to compare different solutions to the same problem
- Prevents plagiarism (wiki log capabilities)
- Incentives collaboration (intra and inter classes)
- Solutions are easily reclycled as the data, the code and its programming environment are available for all in a centralized manner

Research

- Scientific experiments can be readily reproduced
- Documents contain source code, data, equations, descriptions and compilation tools together and synchronized
- Encyclopedia of algorithms with technical explanations
- E-book of the future -- text, source code and data for reader consumer and collaboration
- Comparison and assessment of scientific contribution -- future of paper review process
- Competitions for open innovation

Applications

- Collaborative asynchronous development process among client and developers
  - Client can provide data, problem description
  - Developers (collaborative) provide solutions
  - Client can verify quality of results and give feedback
- No software installation at the client
- Software environment are the same for development and deployment

Experiences to date

- A whole morphological chapter was written using an earlier version of this tool. Now published Academic Press, 2008.
- Being used as report and demonstrations since 1st semester 2008.
- First use in an environment for class, 2nd semester 2008.
- Currently use for Computer Vision Class, 1st semester 2009

Difficulties

- User interface, navigation, organization of the documents. System can grow easily and become chaotic and disorganized.
- Scalabity to expand the system to provide many users simultaneously accessing the system

Competitive advantages

- Future of scientific programming
- Will break the current model of scientific software commercialization (MATLAB and Mathematica).
  - End of individual license installation and distribution
- E-Book editors might be solution providers to this platform

Collaborator welcome

If you want to use the system or collaborate, please contact us.