

TIMESTUDIO

BACKGROUND

Today's research is getting increasingly multidisciplinary and multimodal. Strategic networking between labs is more popular than ever before. These trends raise a need for an efficient general purpose collaboration tool and a common ground between researchers. Such a tool could then be used to spread protocols and paradigms to facilitate replications of studies and strengthen new findings. Also, by letting peers view (and review) the workflow and algorithms used it would make research as transparent and trustworthy as possible.

Many labs use MATLAB to develop new methods of analysis. However, it is often the case that code is specifically written for a certain platform or device. It is also common that algorithms need to be recoded to use new parameters or settings. This requires a high degree of programming skills and consumes a lot of time.

To solve these problems we (Developmental group, Psychology Department, Uppsala University) have started an open source scripting framework in MATLAB to facilitate reuse of code, algorithms and sequences of plugins. To make the tool available for people not interested in programming we have developed a graphical user interface for the core system and custom plugins and a somewhat limited version will be available as a standalone executable. The project is called TimeStudio, and can be downloaded without cost.

TimeStudio aims at getting productive at the moment, saving time by reusing code and supplying code stubs, and by making research transparent and distributable.

WE NEED

We need one or several skilled MATLAB programmers with a good sense of usability design. We also need one or several web developers with an interest in social networking and collaborative work over the internet.

The project will focus on the following issues in the near future as MSc thesis projects:

- Plugin development for eye tracking and general visualization of time series data
- Core development for collaborative development of plugins
- Core development for quality assessment
- Web development for distribution and community building

WHAT WE HAVE

The core system is currently in alpha testing. A limited set of plugins are available for Tobii eye-trackers, Affectiva Q-sensor skin conductance meter, NIRS using Hitachi ETG-4000 and video analysis.

AIMS

- Collaborative science – Spreading of paradigms.
- Transparent science – Understand what has been done. Visualize workflow and make algorithms visible through open source.
- Dynamic processing – One tool that can grow as needed with more subjects, more methods and more analyses.
- Save time – Don't start from scratch. Reuse plugins with new settings. Graphical user interfaces to decrease learning time for first time users. Unified design to decrease learning time for experienced users.

PROJECT TEAM

- Pär Nyström, founder, project leader, designer, programmer
- Gustaf Gredebäck, founder, strategist, designer
- Programmer, system core development and plugin implementation (vacant)
- QA, system testing, user testing (vacant)
- Web Management (vacant)

ACTIVITIES

- Project meetings to plan and prioritize for the future
- Design meetings
- Iterative implementation
- Core stability tests and plugin evaluation
- External plugin evaluation
- Deployment of stable versions and plugin packages, both as stand-alone applications and MATLAB versions
- Support (mailing lists / forum / documentation / tutorials / code-stubs?)

IMPLEMENTATION

- Core system in MATLAB
- Plugins in MATLAB
- Web pages for distribution and collaborative development
- Web pages for support
- Hosting solutions for studies (including stimuli, plugins and datafiles)