

***Olly!* (OnLine Learning for You!): Browser based instant messaging for online learning**



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This paper outlines the design principles and software architecture of *Olly!* (OnLine Learning for You!). *Olly!* is an open source, browser based instant messaging tool designed specifically for conducting classes online. Built on the AJAX scripting model, it is cross-browser compatible and universally available to anyone with access to a computer. Data generated by the tool (text based conversations, file uploads, etc.) is retained by the institution offering the service. While currently a prototype, the future development of *Olly!* will produce a release candidate for use in a variety of online learning applications.

Keywords: e-learning, online education, instant messaging, AJAX, Ruby

1. Background

The *Olly!* communication tool is being developed to help facilitate improved learning outcomes for students in online education. In 2006 a pilot project within the department of Creative Industries at Victoria University, Australia, saw lecturers delivering nearly 50% of their subject material via *MSN Messenger*, a synchronous text based online communication medium. Preliminary results of this project suggested a number of design principles for the development of an instant messaging environment better suited to the needs of teachers and students. *Olly!* (OnLine Learning for You!) is the result of the implementation of some of these principles.

Personalised learning

A convergence is occurring between new technologies and new conceptions of lifelong learning. While advocates of lifelong learning emphasise a shift to more personalised, learner-centred and collaborative activities, next-generation technologies (sometimes dubbed 'Web 2.0') are harnessing the power of human sociability to open up new channels of interaction and knowledge sharing (Sharples et al, 2005). This convergence is at the core of *Olly!*'s development principle to provide a more personalised and dynamic online learning environment.

Ease of use

Wegerif (1998) suggests a link between user experience and learning outcomes in online teaching environments. Students who have difficulty mastering the learning technology tend to underperform and report feeling 'left out' of the learning community. One of the challenges in developing *Olly!* has been to create an intuitive learning environment that required little to no training. As a result *Olly!*'s functionality is self evident and students and teachers are encouraged to interact the moment they log in.

2. Differentiating factors

Other instant messaging systems have been used in online learning environments. Generally these systems fall into three categories:

1. Instant messaging is offered as an addendum to the main functionality of an online learning environment, with the posting of lecture notes and reference material taking centre stage. The focus remains on static content rather than dynamic communication.
2. The communication tool is developed using a proprietary or unsupported scripting language and requires students to download, install and/or update browser plug-ins in order to participate. In some circumstances (such as in public libraries) students may not have sufficient administrative privileges to install and upgrade software on a computer.
3. Proprietary instant messaging clients such as *MSN Messenger* and *Yahoo! Messenger* are used. These clients are standalone applications that need to be downloaded and installed expose users to inline

advertising. The content of communication sessions is owned by the private corporations providing the messaging service, and is stored remotely on their servers.

Olly! differentiates itself by putting 'chat' front and centre in the user experience. It is developed using open source technology that is universally supported in all current web browsers, eliminating the need to install or update plug-ins. Communications may also be archived on a server of the developer's choice and ownership is therefore retained by the institution offering the service.

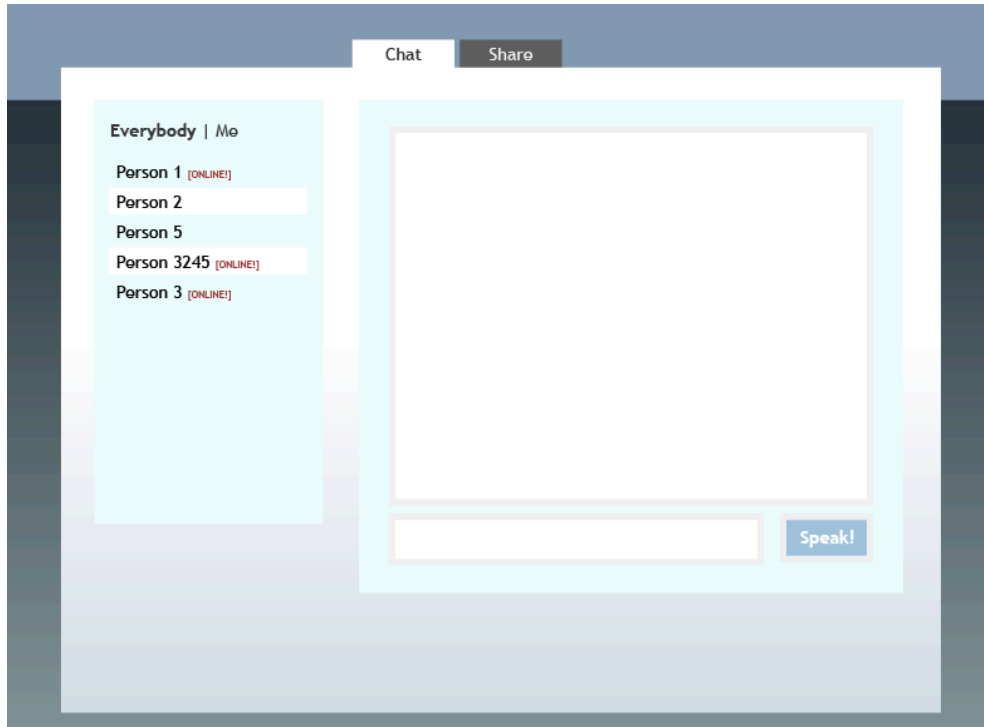


Figure 1: *Olly!* Screenshot

3. Software description

Olly! is a web application built using the AJAX (Asynchronous JavaScript and XML) protocol. Functionality is accessed through a single web page, the contents of which are updated to reflect user actions. Much of the application logic is implemented in the browser on the client side.

- A MySQL database is used to track the presence of users, and to maintain a detailed history of interaction through the tool. Chat messages, login/outs and periods of activity/inactivity are recorded.
- Server-side functionality is implemented atop *Ruby on Rails*, a popular open source web development framework built in the Ruby programming language. This layer manages authentication of users, and exposes service URLs (usually serving data as JSON) to the Ajax/Javascript client (e.g. the client queries a specific URL for chat messages recorded since the client last polled the server, the server returns chat messages as JSON data.)
- The bulk of the application is implemented in JavaScript in the client (web browser.) The Dojo JavaScript library is used for layout and interface widgets, and to provide a cross-browser compatible platform for event handling and Ajax requests.

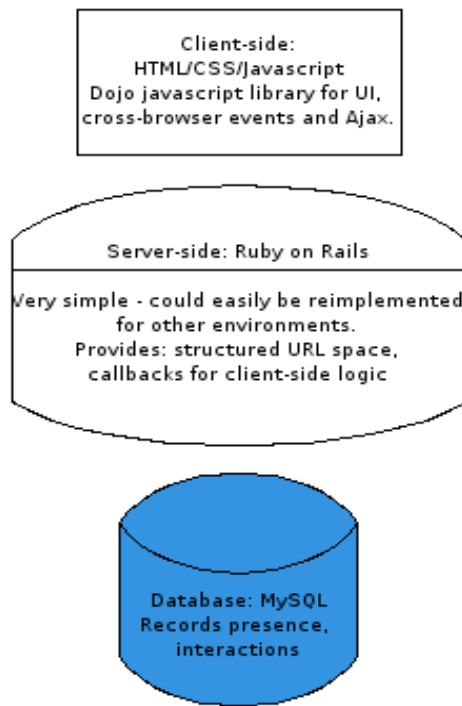


Figure 2: Olly! software architecture

4. Further research and development

Olly! is currently in prototype stage and requires further development and user testing for the production of a stable release candidate. An important planned feature is the development of a 'resource map' visualisation: course material such as readings (articles, lecture notes, PDFs), links to web resources, audio and video files will be organised using a tagging metaphor where participants may add additional references and resources and create personalised categorisations and groupings. These groupings will be displayed visually on a dynamic network map.

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