

## RESUME

Laurent Denoue

2850 Middlefield Road #104A, Palo Alto, CA 94306 (650)862-2594

[ldenoue@gmail.com](mailto:ldenoue@gmail.com)

American green card, fluent in French (native), Spanish and English

### Summary

I like working on finding solutions to big problems that are useful to people and can make their lives easier. I am very creative, curious, and love implementing practical solutions in systems that are used in the real world.

### Professional activities

In 1995 during my military service at the CRSSA (Research Center of Health Services for the French army), I implemented a text tokenizer, **part of speech tagger** and a case-based reasoning engine to disambiguate parts of speech tags. This tool was used to generate topic clouds from open-ended answers to questionnaires.

From 1996 to 2000 during my PhD at Syscom (University of Savoie), I worked with Laurence Vignollet on the importance of web annotation systems in digital libraries and the use of annotations to improve personal information organization. I designed **YAWAS** (Yet Another Web Annotation System), a web annotation tool to collect annotation data from students and showed with Laurence that an **unsupervised classifier** produced better classifications when using highlighted text over using the fulltext of each web page.

**Deployment:** 20 students during one month, 2 users during 2 years

**Technologies:** Plugin for Internet Explorer and hierarchical agglomerative clustering in Java

**Publications:** RIAO, WWW9, Webnet

In 2000, I joined FXPAL and worked with Gene Golovchinsky on **XLibris**, a freeform annotation system designed for electronic books and TabletPCs. We worked on the hard problem of **repositioning** annotations when the **document layout** changes (e.g. the web page is resized or the font changed).

**Deployment:** 3 researchers reviewed papers using Xlibris

**Technologies:** C++

**Publications:** UIST, ECAI workshop

**Patents:** 4 applications

With Patrick Chiu, I then started and co-designed **Shared Text Input**. The system facilitates text-entry on small devices like **PDA**s by allowing users can share their notes in real-time during a meeting or in the classroom. They can quickly reuse text or ink already entered by fellow note takers. In addition, I wrote a PowerPoint add-in that captured the slide image and text in real-time from the teacher's laptop, allowing students to directly click on the slide images to reuse text, avoiding the need to type each word. Notes and slides were also archived on a web server, providing students later access to the notes taken by their buddies and themselves.

**Deployment:** I deployed it at the Naval Postgraduate School in Monterey with 20 students during more than 6 months

**Technologies:** java applet on PocketPC, native C on PalmOS; Server in java servlet under Tomcat and MySQL, Javascript and DHTML for the web interface

**Publications and invited talks:** CHI2002, CHI2003, WMTE2004, EDMEDIA2004, CSCW2004, Graphics Interface2005, AACE Journal, Journal of Information Science, teaching and presentation at NPS in Monterey

**Patents:** 5 applications

As a member of the social computing group with Elizabeth Churchill and Les Nelson, I helped design and implement the **PlasmaPoster** client, a community bulleting board that shows web pages posted by email within an organization. As part of the design ideas, I also implemented a real-time 3D interface we called "AttrActive Windows" that mimic the real behavior of sheets of paper attached to a virtual corkboard. Each window is animated in real-time by a physics engine I wrote that simulates paper with a supporting mesh of particles. Each content is a texture that originates either from a local image read from the file system or streamed from a server. The server is able to grab the content of any desktop window and send it to the **AttrActive Window** client. Users can freely interact with these live windows by clicking on the texture: mouse and keyboard events are sent back to the server and regenerated. This mechanism allows users to interact with the attractive windows as if they were locally generated.

**Deployment:** still in use at FXPAL, being sold as a product in Japan

**Technologies:** Attractive Windows client is OpenGL in C++, server was based on VNC code; PlasmaPoster: Visual Basic with Web Browser controls, providing easy customization of the interface

**Papers:** IUI2003, CHI2003, SigGraph2003, book chapter, C&T2003, Interact2003, UIST2003, DIS2004, Ubicomp2003

**Patents :** 7 applications

In 2004, I created **ProjectorBox**, a self-contained **appliance** that captures slide presentations going through projectors in organizations. It intercepts the VGA stream going into the projector, allowing it to capture any application and any operating system. A simple image difference algorithm snaps new pictures and sends them for Optical Character Recognition, slide detection and archival to the web server. The web interface allows users to quickly search by keyword, browse presentation slides by time and export to PDF, PowerPoint and Flash. PBox is now being evaluated by the product division team in Japan

**Deployments:** 1 used internally at FXPAL, 1 at the Naval Postgraduate School (NPS) where students really value and trust it for study aid; 3 deployments at Fuji Xerox in Japan; 1 at the Institute for The Future (ITFF) in Palo Alto, CA; 3 at the University of San Francisco (QB3)

**Technology:** C++ for capturing images and audio, Visual Basic for calling the Omnipage OCR SDK, Java servlets and MySql for image classification and storage, Ajax and Javascript/DHTML for the Web Interface.

**Publications:** ELearn2005, SPIE2005, WWW2006 workshop

**Invited talks:** Stanford, ITFF, Berkeley, Google

**Patents:** 5 applications

In 2006, I consulted for **Activeweave** for the design and implementation of their first product called Stickis, a tool that brings blog posts in the context of the pages the user is reading. Stickis required a **plugin** for Internet Explorer. I developed it in C++ for both Internet Explorer 6 and 7 so as to minimize the dependencies on host systems. I also developed one-click installer that allows users to seamlessly install it. Developing this plugin was a veritable challenge, as I had to write custom keyboard hooks and had to hook windows through sub-classing in order to overlay “sticki” windows on top of any content type, be it HTML, PDF, Word or others loaded in the web browser. Instead of relying on C++ for the user interface, I chose instead to use the web browser control so that the entire user interface could still be developed using DHTML and Ajax. UI elements communicate in javascript through window.external.methodname. This mechanism allowed me to extend javascript to new functions for moving and resizing windows, but also for getting more XMLHttpRequest objects from the native operating system.

**Deployments:** As of January 2007, the plugin is in daily use by **thousands of users**

**Technology:** C++, toolbar and browser helper object development, Internet Explorer 6 and 7, javascript, DHTML

In my spare time, I continue to improve **YAWAS**, the web annotation system that I originally developed during my PhD in France. YAWAS now uses a web server and **Lucene** to store annotations and retrieve them, allowing users to access their annotations from any computer. In addition to the version for Internet Explorer, I also recently developed an extension for Firefox, making YAWAS more broadly available. I continue to have a strong interest in annotation systems, and their use to improve information retrieval.

## **Education**

2000 PhD in Computer Science, University of Savoie (France), with Francois Rechenmann (INRIA, Rhones-Alpes) and Laurence Vignollet (SYSCOM, University of Savoie)

1996 Master in Computer Science with Pr. Siklossy, LIA, University of Savoie (first of class)

1996 Engineer degree from ESIGEC, specialization in computer science and artificial intelligence (second of class)

1993 Bachelor in computer science, University Joseph Fourier, Grenoble (second of class)

1992 Mathématiques Spéciales et Supérieures (Math SUP/SPE)

## **Patents and patent applications**

1 granted and 33 pending.

## **Publications**

1999

- Adding Metadata to improve retrieval Yet Another **Web Annotation** System (Technical Report)
- Annoter sur le Web avec **Yawas** (Présentation Groupe de Travail I3)
- **Yawas** : un outil d'annotation pour les navigateurs du Web (IHM'99, Montpellier, France, 22-26 Novembre 1999)
- L'importance des **annotations** dans la recherche d'information (JED Lyon)

2000

- An **annotation** tool for Web browsers and its applications to information retrieval (RIAO), Laurent Denoue, Laurence Vignollet
- New ways of using Web annotations (WWW9)
- L'importance des **annotations**: Application à la classification des documents du Web (Documents Numériques vol 4, num 1-2, 2000 p37-57)
- De la création à la capitalisation des **annotations** dans un espace personnel d'informations (Technical Report and PhD thesis)

2001

- Nouvelles applications pour les **annotations** électroniques (Technical Report)
- Personal Information Organization using **Web Annotations** (Webnet 2001), Laurent Denoue, Laurence Vignollet

2002

- **Shared Text Input** for Note Taking on Handheld devices (CHI)
- Annotations in the Wild (SAAKM workshop at ECAI, Lyon France), Laurent Denoue, Laurence Vignollet
- Moving Markup: Repositioning **Freeform Annotations** (UIST), Gene Golovchinsky, Laurent Denoue

2003

- **AttrActive Windows**: Active Windows for Pervasive Computing Applications (IUI 03), Les Nelson, Laurent Denoue, Elizabeth Churchill
- **Shared Freeform Input** for Note Taking across Devices (CHI 2003), Laurent Denoue, Patrick Chiu, Tohru Fuse
- AttrActive Windows: Dynamic Windows for Digital Bulletin Boards (CHI), Laurent Denoue, Les Nelson, Elizabeth Churchill
- Implementing a paper flier metaphor using **cloth simulation** (SigGraph), Laurent Denoue, Les Nelson, Elizabeth Churchill
- The Plasma Poster Network: Social Hypermedia on **Public Display** (Public and Situated Displays: Social and Interactional Aspects of Shared Display Technologies (eds. O'Hara, Perry, Churchill, and Russell), The Netherlands: Kluwer Academic, July, 2003), Elizabeth Churchill, Les Nelson, Laurent Denoue, Jonathan Helfman, Paul Murphy

- Multimedia Fliers: **Informal Information Sharing** With Digital Community Bulletin Boards (Communities and Technologies), Elizabeth Churchill, Les Nelson, Laurent Denoue
- The **Plasma Poster** Network: Posting Multimedia Content in Public Places (Interact 2003), Elizabeth Churchill, Les Nelson, Laurent Denoue, Andreas Girgensohn
- A fast, **interactive 3D paper-flier metaphor** for digital bulletin boards (UIST 2003), Laurent Denoue, Les Nelson, Elizabeth Churchill
- Palimpsests on public view (UbiComp 2003 demonstration), Scott Carter, Elizabeth Churchill, Laurent Denoue, Jonathan Helfman, Paul Murphy

2004

- **Collaborative Note Taking** (WMTE 04), Gurminder Singh, Laurent Denoue, Arijit Das
- Sharing Multimedia Content with Interactive Public Displays: A Case Study (DIS 2004), Elizabeth Churchill, Les Nelson, Laurent Denoue, Jonathan Helfman, Paul Murphy
- Taking Notes with **Shared Text Input** PPT (EDMEDIA 2004), Laurent Denoue, Gurminder Singh, Arijit Das
- **Collaborative Note Taking** in the classroom (CSCW 2004), Laurent Denoue, Patrick Chiu, Gurminder Singh

2005

- **Ink Completion** (Graphics Interface GI'2005, May 2005), Laurent Denoue, Patrick Chiu
- Taking Notes on **PDA**s with Shared Text Input (AACE Journal ISSN 1065-6901, Volume 13, Issue 13, July 2005), Laurent Denoue, Gurminder Singh, Arijit Das
- Collaborative Note Taking using PDAs (Journal of Information Science and Engineering, Volume 21, Number 5, September 2005), Laurent Denoue, Gurminder Singh, Arijit Das
- **Seamless presentation capture**, indexing, and management (SPIE 2005), David M. Hilbert, Matthew Cooper, Laurent Denoue, John Adcock, Daniel Billsus
- **ProjectorBox**: Seamless presentation capture for classrooms (eLearn 2005), Laurent Denoue, David M. Hilbert, John Adcock, Daniel Billsus, Matthew Cooper

2006

- Seamless Capture and Discovery for **Corporate Memory** (WWW2006 workshop in intranets), David M. Hilbert, Daniel Billsus, Laurent Denoue
- The USE Project: Designing Smart Spaces for Real People (UbiComp 2006 workshop, September 20, 2006), Maribeth Back, Gene Golovchinsky, John Adcock, John Boreczky, Laurent Denoue, John Doherty, Tony Dunnigan, Gerry Filby, Pernilla Qvarfordt, Bill van Melle

2007

- Designing complex document sharing spaces: a research vision of next-generation conference rooms (book chapter in A Document (Re)Turn: Revisiting Document

Science, to appear 2007), Maribeth Back, Daniel Billsus, Laurent Denoue, David Hilbert

### **Teaching and talks**

- 2000-2004 during my PhD at the University of Savoie: functional programming in CAML, Java programming, Networking (to master students and bachelor level)
- Feb 20, 2003 in Monterey "Shared Text/Ink Input for Note Taking across Devices" (ppt)
- Oct 4, 2003 "Shared Text Input across Devices", International Telecom Conference, Monterey, CA
- Jan 11, 2004 "Shared Text Input: PDA, laptop, DANA", Naval Postgraduate School, Monterey, CA
- Jan 12, 2004 "Note taking on PDAs: Shared Text Input", University of Savoie, France
- Jan 27, 2004 "Annotation Systems, design and usages, University of Savoie, France
- March 17, 2006 "Seamless capture and discovery for corporate memory", Stanford Human-Computer Interaction Seminar, Daniel Billsus, Laurent Denoue, David Hilbert
- March 21, 2006 "Seamless capture and discovery for corporate memory", Berkeley Computer Science
- March 22, 2006 "Seamless capture and discovery for corporate memory", Google Tech Talk

### **What I also do**

- Outdoor running, mountain biking, swimming
- Competing in local and national races (mountain biking, triathlons)