Applications of Mixed-Initiative Interfaces and Intelligence to Electronic Portfolios

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Introduction

• What are portfolios?
  • Collection of information
  • Highlights learning, career, experience and achievements
  • Can be used to augment traditional assessments
  • Can facilitate self-regulatory learning processes
Introduction

- ePortfolios are spreading:
  - Job applications
  - High school graduation (BC)
  - Marketing

- New tools are being written:
  - SPARC
  - OSPI
  - Commercial products
Motivation

• We have a lot of buy-in from the institution side
  • Universities
  • Companies

• We have almost no buy-in from the user side!
Background

• Our project is called SPARC
  • Student Portfolio Architecture and Research Community
  • Almost two years old
  • Second major revision
  • Client/server
  • Everything is an artifact
  • Currently has > 500 users
SPARC

- Split in two
  - Server-side is written in Java
  - Server uses SOAP to communicate
  - Multiple interfaces possible; currently use Java

- Portfolio creation occurs cyclically
  - Add artifacts
  - Create structure
  - Publish
Current State

• System’s initiative
  • Bringing in external artifacts

• User’s initiative
  • Everything else
  • All system/user interactions
Areas of Improvement

• How do we bring in mixed-initiative?
  • A system that can learn, then help users based on what it learns
  • Initial portfolio creation
  • Adding artifacts
What we DON’T want to do

• Wizard-style interfaces
  • Involves pre-programming portfolio types
  • We have identified at least 19 so far, in 4 categories
  • Little research has been done so far, and what has is inconclusive
  • Still constantly evolving
Learning User Intentions

• To be useful, we need to be able to learn and adapt
  • Figure out what the user is doing, recognize this over sessions and between users
  • Be able to apply this back to users
Creating Portfolios

• Learn creation patterns
  • Initial layout of categories, for example
  • Recognize common layouts
  • If we see someone creating common categories, help them finish
Adding Artifacts

• We get metadata when assignment submission systems give us new artifacts
  • Automatically categorize artifacts based on previous user choices
  • Categorize based on other user choices for same artifacts
Methods

• Utilizing MI-Edna software to help recognize opportunities
• Extend to learn about potential opportunity sports
• Utilize Fleming/Cheng’s bother cost model, for example, to determine whether to do something on our own or wait for the user
Knowledge Representation

- We’ve created an ontology to represent information held by the system
  - Interactions information
  - Portfolio information
  - Artifact information
  - Multiple users and portfolios
  - Needs to be further expanded for MI data
Conclusions

• Mixed-initiative may increase the usefulness of electronic portfolios
• A definite area of research!
Thanks!

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