JMU CS Wisdom In Knowledge Interchange

Purpose

The JMU CS Community, comprising students, staff, and faculty, has a wealth of knowledge. To best communicate, update, share, and otherwise leverage their institutional, academic, more general-, and more-niche experience, expertise, and information, the community would benefit from an application that facilitates knowledge sharing.

To catalog and present information from the general to the specific, the community needs an indexed collection of editable factoids that any stakeholder can create, read, update, and delete. Large knowledgebases can suffer from a paradox in which they become more useful as they grow to include more information, but simultaneously their maintenance cost increases. To slow the pace of cost increase while continuing to support the benefits of further aggregated information, indexing, and support for both orienteering and teleporting [2], the application must support hypertext [6].

With such an application, students, staff, and faculty, whether new to the community or veteran, might either find the information they need to participate in the community or solve their technical problems, or if they are unable to find it, are invited into the welcoming and inclusive community of knowledge-sharers as authors of the information once they learn it.

Users

The application should be designed for the following ~~users~~ people:

Students

The JMU CS Department supports the computer science education of undergraduate and graduate students. The students have the exciting(ly challenging 😅) opportunity to learn the fundamentals of computation and its limits, the ethics of impact on the unprecedented scale of billions, as well as the tools and skills required to responsibly and sustainably practice the discipline in ways that help make the world of tomorrow more accessible, just, and equitable. It's dangerous to go alone [3], so on their multi-year journey the students take resources to help. Some of those resources are human (i.e. as in their peers and those described in latter subsections), others are technological and informational. For the best chances of success in their studies and beyond, the students require an updated, contextual source of knowledge about general topics in the field, as well as about JMU-CS-specific particularities.

Staff

The JMU CS Staff work in a context that requires historic efficiency to support a caring, dynamic, continuously-improving set of stakeholders (students, staff, and faculty) increasingly large in number with their resources which continue to be stretched near the breaking point. To perform at the shattering, admirable level that they do every

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day, the staff require up-to-date information about the operations, requirements, and information of the department.

Faculty

The faculty would like to scaffold the students' evolution from question-askers to answer-writers (I'm over 200 words… profess~~ori~~onal hazard 😆).

Features

The application (let's call it a "wiki" [7]) should support Creating, Reading, Updating, and Deleting ("CRUD" actions) knowledge units, let's call them "pages". These pages should support some kind of formatted-text editor either via WYSIWYG [5] or some kind of documented markup [8]. This formatted text should include among other features, the ability to cross reference or "hyperlink" from one page to another.

For example, if a stakeholder were to need platform-agnostic, step-by-step instructions to help them set up their development environment to be able to authenticate to both the JMU CS stu server, as well as to github.com, they could create a beginner ssh page [1]. Then if others noticed improvements or clarifications, they could edit the page [9]. The wiki would automatically create a search index whenever updates were made to facilitate search [10].

Data

The application will facilitate the CRUD actions for pages. A page will comprise a URL (a string), page title (string), page content (a huge string), an author (a string), and an update date(time) [4]. An abridged example follows [11].

```
{
  "title": "Undergraduate Research",
  "url": "https://wiki.cs.jmu.edu/department/research",
  "content": "====== Overview ======\nThe Undergraduate Research Lab is
              comprised of CS faculty who are currently working with or
              actively seeking talented undergraduate research assistants to
              collaborate on research projects in a variety of fields. Students
              gain experience in all aspects of research, while working closely
              with faculty members to push the boundaries of human knowledge.
              Projects can be anywhere from a semester long collaboration to
              multiple years. If you are interested in research, are thinking
              about graduate school, or just want to learn more about what
              we're up to, please contact one of the faculty members listed
              below.",
  "author": "stewarmc",
  "updated": "2025/03/03 23:47"
}
```

Works Cited

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2. Jaime Teevan, Christine Alvarado, Mark S. Ackerman, and David R. Karger. 2004. The perfect search engine is not enough: a study of orienteering behavior in directed search. *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, Association for Computing Machinery, 415–422.

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