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Disability Advocacy using a Smart Virtual Community

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Keywords: Health Informatics, Machine Learning, Semantic Web, Natural Language Processing, Disability, Critical Disability, Wikibase, Disability Advocacy, Disability Rights.


Abstract: The lack of readily available disability data is a major barrier for disability advocacy globally. The collection and access to disability data is crucial to address social inequities, discrimination, and human rights violations within the disability community. The Disability Wiki project intends to use AI techniques such as Machine Learning and Semantic Web to extract and store existing disability-related data into one platform (Wikibase) and to provide a multilingual natural language enabled search engine and a screen-reader-accessible for its users.


1 INTRODUCTION


The lack of availability of disability data is a major barrier for disability advocacy and disability rights monitoring globally. Disability advocacy information and data is not readily available which can further delay important projects and commissions by human-rights and non-governmental organizations (NGO) (Loeb, 2013).


It is vital to have readily available structured and unstructured disability data from a critical disability


perspective to track systemic discrimination, social exclusion, adverse socioeconomic outcomes, and social inequity for persons with disabilities. Health informatics (El Morr, 2014, 2018) and artificial intelligence techniques (Akerkar et al., 2012; Diefenbach et al., 2017; Diefenbach et al., 2019; El Morr & Ali-Hassan, 2019b; Gorman et al., 2021; Vercouter & Maret, 2012) provide helpful tools to organize, store and search for disability data using Natural Language Processing (NLP). Also, virtual communities that allow remote members to


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Figure 2 shows part of the glossary that was created for tagging the disability rights reports. Column A shows the primary tags that were used to tag paragraphs while the synonyms representing the terms are in the columns that follow.

A	B	C	D	E	F	G	H	I
client	account							
cognitive								
committee								
common law								
communication	message							
compensation	damages	indemnification	indemnity	recompense	recoupment	redress	remuneration	reparation
conditions	contingencies	provisions	qualifications	reservations	stipulations			
conference	assemblage	assembly	convocation	gathering	ingathering	meeting		
connecting employers and persons with disabilities								
consent	allowance							
consent to medical care								
consequences	aftereffects	aftermaths	backwashes	children	conclusions	developments	effects	issues

Figure 2: Glossary.

Figure 3 shows a page of the *Disability Wiki* project web site. The image shows the search bar with examples of questions.



Figure 3: Disability Wiki Web Page.

The disability wiki website uses QAnswer API endpoints to send the questions to and retrieve answers from the disability wiki.



Figure 4: Search function flow of the website.

4 DISCUSSIONS

The multidisciplinary nature of critical disability studies, health informatics and computer science required the researchers to deliberate and coordinate on every stage of the project. To reach a mutual agreement, the project required multiple meeting sessions and re-iteration between researchers for unexpected delays, deadlines, clarification, or challenges.

In the domain of critical disability studies, we are not aware of any other tool or effort for collecting and giving easy access to related data. Our proposal therefore responds to this need.

Giving access to data through the Web is of course not new. However very topic-focused data is too

specific to be adequately made accessible by generalist search engines such as google. Also, the online encyclopedia Wikipedia.org is not suited because it requires editing documents, which is not the case on our platform (document upload).

The web site www.enlaved.org is an example of domain related data collection, however document upload is not proposed, nor automated tagging or semantic free text search.

Future evaluation for the use of the virtual community using technology Technology Acceptance Model or the RE-AIM Framework would be important to understand users acceptance (El Morr et al., 2017). A user interface evaluation is underway to ensure accessibility of the platform.

Finally, the platform supports English and French, and is already expanding in scope as we are currently adding data and documents pertaining to Black Disability Studies and Disability Justice.

5 CONCLUSIONS

Readily available and easy to access disability data is an essential need today. The social model of critical disability allows us to see and address the discrepancies, discrimination, and inequities in the system for persons with disabilities.

The *Disability Wiki* virtual community uses AI techniques to easily integrate and index existing disability data into one accessible platform as well as allowing natural language searching for its' users. The platform is currently in a pilot stage.

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