Remediating Civic Tech

Abstract. Civic technologies are designed to mediate government and citizen interactions, but often fall short of this goal. In this poster, we present our on-going work of remediating civic tech applications in order to connect citizens to government services, and to one another. We describe the development of an open-source transcription engine that transforms video into searchable archives of government legislative meetings. By exploring the process of remediation, we argue that civic tech designers can better achieve their goals of brokering relationships between people, information, and governance.

Keywords: Civic Tech, Open Data, Government Transparency, Transcription

1 Introduction

Information communication technologies (ICTs) have had a transformative effect on civic engagement - allowing citizens to interact with government services, and public officials in new, and meaningful ways [1]. But, often civic technologies are designed, implemented, and managed by governments [2] with little input from citizens. There is currently a lack of understanding about how a civic tech application meets citizen needs, or what form of engagement citizens seek around which types of issues [3]. Thus, as civic technologies continue to play a mediating role between citizens and their government, we believe there is a need to explore different ways that these technologies can be improved, repaired, and redesigned to meet the needs of a diverse polity. We suggest that this process can be described as a form of remediation [4]. That is, the redesign, repair, or re-imagination of a civic tech application requires more than simply a technical fix. We argue what is required is a sociotechnical process to remediate a relationship between individual citizens and the state.

In this poster we describe a civic tech application built to remediate a relationship between citizens and their elected city council representatives in Seattle, WA. We describe an existing application, Legistar, that hosts different multimedia recordings of city council meetings, and our work to improve the accessibility of information that it contains.

2 Motivating Case: Legistar

Legistar is a proprietary platform designed for state and city government agencies to make the transactions of their legislature publicly accessible. This is achieved, in

part, by an automated indexing of text-based documents - typically, meeting agendas, minutes, and supplementary or supporting documents used in a legislative session. In 2012, Seattle WA's City Council began posting video-recordings of public meetings to Legistar. Video-recordings, one might presume, represent a valuable new source of government transparency, as they provide evidence of exactly what was said, by whom, and in what order. And indeed, these videos represent an exact public record of a city council meeting that are accessible to anyone with an Internet connection. However, navigating the proceedings of these video-recordings is exceptionally difficult. An end-user must first locate the corresponding meeting agenda, and then guess when a particular issue was discussed given the length of the recording, and the docket of events. So, while Legistar delivers a powerful system for storing legislative transactions, and provides an exact record of events in the form of a video-recording, it does a poor job of making this information discoverable, and useful to citizens.

3 Redesign of Legistar

Over the course of 2017, we developed an open-source web-application to collect video-recordings of a legislative session stored in Legistar, transform these videos to an audio file, and then transcribe the recordings to produce a full-text, searchable document. By consolidating and standardizing, or remediating, data stored in Legistar we believe we have produced a valuable new system for transparency. Below, we describe the architecture of our web-application in detail.

Step 1: Transcription We first retrieve video-recordings from Legistar using a freely available API provided by the city of Seattle. We then strip the audio from each video. With the audio of each file created we begin a two part transcription process: Step 1 involves separating the audio into 18 (eighteen) second chunks for transcription processing. This step is necessary to bypass existing API limits for free speech-to-text services, such as the Google Speech Recognition (GSR) service. In step 2, we then run each 18 second chunk through the GSR service, and recombine all transcribed audio into a single plain-text document. Through this process, we achieve $\tilde{8}5\%$ transcription accuracy. Our current transcription process does not automatically create markers of conversational turn-taking, i.e., 'Speaker 1: .... Speaker 2: ....' However, we address this limitation in our storage solution, described below.

Step 2: Search With the transcripts generated, we implement a 'fuzzy search' utility by using the text retrieval approach 'Term Frequency - Inverse Document Frequency' (TF-IDF) [5] . We construct a tree of information about each transcribed document in the corpus, and then indexed this information for the entire corpus. After creating the tree, we created a simple searching method that takes a search phrase (provided by the use of our application) and reads the tree to find the most relevant nodes (doc-

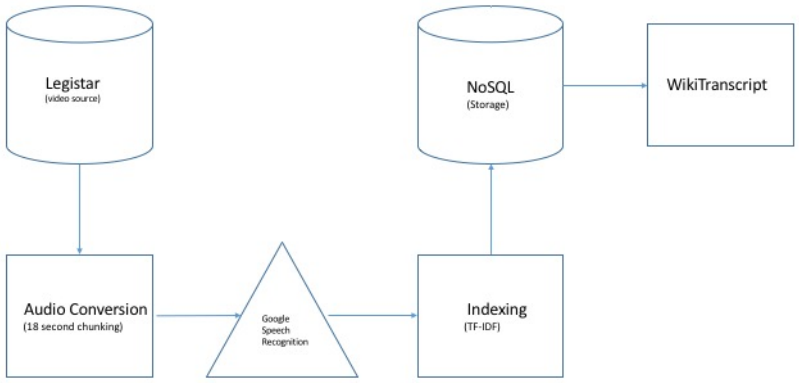

Fig. 1. Overview of Web Application

uments) by their TFIDF score. Our application is developed such that it updates this index each time a video is transcribed.

Step 3: Storage Our system was built to ultimately store data both locally and on a separate storage servers in NoSQL, however the storage solution is modifiable within our architecture. As stated in the transcription step, our initial transcripts achieve an $\tilde{8}5\%$ accuracy , but a lack of conversational indicators, or turn-taking, limits the value of the transcripts. To overcome this limitation, we implement a Wiki-based editing function for all transcripts using the Wiki.JS library. This allows any user of our application to edit, and improve transcripts. For a controversial and or heavily debated city council meeting, we believe this will be a valuable feature that enables crowd-sourced improvement of a transcript.

4 User Testing

We have recruited a set of volunteers through Seattle's Civic User Testing group to begin exploring the utility of our web-application. Our preliminary work with users includes a set of task-based talk-aloud sessions in which we observe participants searching for, viewing, and editing transcripts using our application. We then ask users to rate their satisfaction with each of these tasks. In the final poster for this presentation we will report results from user-testing sessions, and provide a demonstration of our web-application running against the City of Seattle's exisiting Legistar system.

5 Remediation

We believe there is an important role for information systems designers to remediate civic tech applications that fall short of connecting citizens to their government officials. This type of work is an especially critical for applications that are supposed to provide for government transparency and accountability. In this poster, we have described a prototype system for transforming video recordings to editable transcripts in service of improving the transparency of city council meetings in Seattle, WA, but we believe that this free and open-source application can be a valuable contribution to many information systems research settings.

References

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