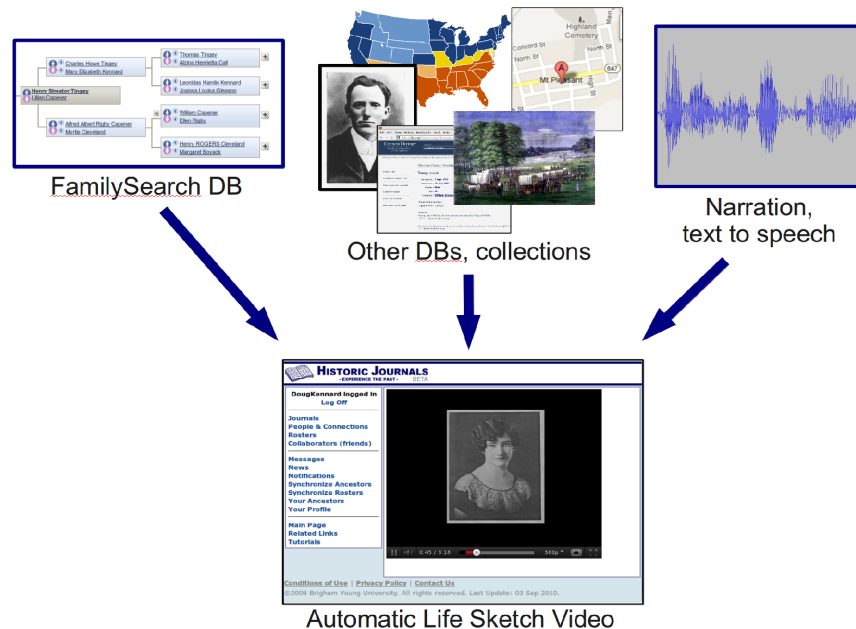


Automatic “Life Sketch” Videos

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ABSTRACT

We present and demonstrate proof-of-concept for automatic creation of “life sketch” videos about peoples’ ancestors and other historical people. These video life sketches consist of a short summary of the person’s life, much like a traditional spoken or written biographical life sketch given at the person’s funeral or a family reunion of the person’s descendants. Basic biographical information for a life sketch video is retrieved directly from the FamilySearch database using the FamilyTree API. Other databases and collections are automatically searched for additional relevant information (pioneer companies, ship immigrants, etc.). When possible, the life sketch is automatically enhanced with photos, video sequences, maps, quotes, and additional historical contextual information to make a more interesting presentation. Narration is generated using automatic text-to-speech technology and/or by piecing together pre-recorded narration segments and words. Using computer translation and text-to-speech, it is also possible to generate these videos in various languages as needed.

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1. INTRODUCTION

Many people are uninterested in family history because they think that it consists only of a bunch of boring facts (names, dates, and places) found in old books and census records. Others are actually interested in learning about their roots, but simply do not wish to spend the time and effort traditionally necessary to do so. Both of these groups of people would be well-served if we can help them connect with the lives of their ancestors in an interesting and engaging manner with little effort on their part. Such an experience would introduce them to some information about their ancestors and – more importantly – it might provide a seed of curiosity that leads them to find out more about their heritage.

In this paper, we present and demonstrate a proof-of-concept system for automatic creation of “life sketch” videos about peoples’ ancestors and other historical people. Starting with basic biographical information about a person from FamilySearch, we then automatically combine information from other databases and add appropriate photos, video/audio clips, maps, generated/translated narration, and background music to create a short video about the person.

This project builds on our previous work with the BYU Historic Journals website (<http://journals.byu.edu>) in which information from journals [4], a pioneer database, and ship immigrant database were linked to people in FamilySearch.[3]

2. RELATED WORK

As a part of the Utah Sesquicentennial Celebration In 1997, Dr. Evan Ivie and Dr. Bill Barrett led a group of students in the development of the Ancestral Pioneer Past project. Members of the public could fill out and turn in a genealogy chart. Project volunteers manually looked up connections from the charts to the Ancestral File database. Pioneer and photograph databases were automatically searched for the peoples' ancestors, and then one-page narratives with pictures (if available) were provided to the people who had submitted their genealogy.[2]

In this paper, we go beyond the printed page and create a documentary-like video highlighting some aspects of a person's life. We also leverage the new FamilySearch platform to discover ancestors automatically without manual data entry of users' genealogy.

3. METHODS

We use our existing BYU Historic Journals website as the platform for creating automatic life sketches. The site uses the FamilySearch API to interact with FamilySearch and retrieve information about our users' ancestors. For a given ancestor of interest, we request information about that person (birth, marriage, death, and burial dates and places), the person's family members (parents, spouse, children, siblings), and the latitude / longitude of the event places that were returned.

We then check for links to other databases that are associated with that ancestor. Such links provide information that allows us to expand the narrative and incorporate other source materials (such as photos, videos, quotes from journals, etc.). For example, if a particular person were to be found in a record of Civil War Soldiers, we could add a few seconds of information about the war, showing photos, maps, or other relevant visuals – possibly even information specific to the person's own regiment or the battles in which they participated. Likewise, for someone found in the pioneer database, information about pioneers crossing the plains would add interesting historical context to the life sketch. For this proof of concept system, the two specific databases we use are the Pioneer database (Section 3.1), and the Migration Database (Section 3.2).

As information about an ancestor is combined, we automatically piece together an accompanying narrative script. We also check our database of additional source materials for images, maps, video clips, or other materials to include in the video (Section 3.3). The narration is generated using speech synthesis / Text To Speech (TTS) software and/or pre-recorded narration segments. We can also use automatic language translation services to translate the narration into other languages if necessary.

3.1 Pioneer Overland Travel Database

The *Mormon Pioneer Overland Travel, 1847-1868* database (Pioneer database) contains information about many of the people who crossed the North American plains and Rocky Mountains to settle in the West (more than a 1,700 kilometer journey) between 1847 and 1868 before the completion of the Transcontinental Railroad. Most of these pioneers traveled in wagons or on foot in companies (groups) of up to a few

hundred people in size. The database contains 53,525 person records in 364 pioneer companies. If known, the name, birth date, and death date are included for each person. Sources are listed for the information included, and in many cases there are "trail excerpts" – transcribed portions of journals and autobiographies of the pioneers that discuss the journey with varying degrees of detail. The trail excerpts are cross-referenced so that they appear as sources for other pioneers they discuss, not just the pioneer that wrote the excerpt. The database was created by the LDS Church and is hosted on their website.¹

3.2 Mormon Migration Database

The *Mormon Migration* database (Migration database) contains information about members of the LDS Church who immigrated to North America as ship passengers from 1840 to 1890. There are over 92,000 passenger records from about 550 ship voyages in the database. More than 1,000 first-hand accounts of the voyages are included in the database and are linked to the corresponding ship voyage web pages.[1] Passenger records include the person's name, birth year, origin, occupation, and links to any other family members on the same voyage (although the relationship to those family members is not specified). The compilation of the database was initiated and directed by Professor Fred E. Woods and it is currently hosted on the BYU Harold B. Lee Library website.²

3.3 Source Materials Selection

On our BYU Historic Journals website, we store a collection of portrait photos, historical photographs of several cities and locations, and photographs that relate to specific historical contexts (pioneer and ship travel). In addition, we store some video clips and other materials that can be used in the automatic life sketches when appropriate. We track these materials based on their type (photo, video, audio, etc.), their subject matter (person portrait, place photograph, etc.), and time period. During life sketch generation, we try to select materials that will go well with the narration. When more specific materials are available, they may be given preference over more general materials. For example, materials about a specific ship voyage or pioneer company might trump generic materials about ship/pioneer travel in general. Likewise, a photo from a specific location and time period may take precedence over a simple map of the same location or a photo of the location from a different time period.

4. DISCUSSION AND CONCLUSION

We currently only use a small collection of photographs and other materials, and only link to two databases (the Pioneer and Migration databases) to provide historical context. However, many other sources of data exist that could also be linked for use in generating life sketch videos, from war records to census, birth, and death records, various databases, and lists of people and groups. Large quantities of historical source materials are also readily available for use.

Instead of the free speech synthesizer software we use to generate narration audio, much more realistic sounding com-

¹<http://www.mormontrail.lds.org>

²<http://lib.byu.edu/mormonmigration>

mercial alternatives could be used. Likewise, instead of leveraging a free website to perform automatic translations, commercial software or services could be used. And while most of our video segments are still-frames with no effects or transitions (much like a slide show), effects and transitions could easily be added.

Despite these many potential improvements, our prototype does implement all of the main functionality required for automatic life sketch video creation. It serves as a good proof of concept, demonstrating that interesting videos about peoples' ancestors can be generated automatically.

5. ACKNOWLEDGMENTS

We thank the Family History and Church History Departments of The Church of Jesus Christ of Latter-day Saints for permitting us to use the FamilySearch API and their genealogical database and also for making the Mormon Pioneer Overland Travel database available online. We thank Professor Fred E. Woods for making the Mormon Migration website available and allowing us to link to it. We also thank the BYU Harold B. Lee Library for making many of the images we use in our videos available.

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