PlayTheCityRE: a Visual Storytelling System That Transforms Recorded Film Memories Into Visual History

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Abstract—Within social media we find many stories that tell us the world that is around us. Unfortunately, we tend to forget what happened in the past and the young generations are losing a cultural heritage passed down for generations. In the attempt of preserving memories and of intercepting the attention of the new generations, in this paper we propose PlayTheCityRE, a location-based storytelling system that merges private film memories shot from 1940 to 1989 (e.g., 8mm, super8mm) with modern communication technologies to tell the story of our past while walking in city streets. The system is provided with a mobile application that allows people to explore an unusual city through the eyes of amateur film sequences (now historic) and to select different routes that will bring them in the same city places where they were filmed. By merging film memories with modern technologies, our system engages different audiences in specific ways and on multiple levels, allowing them to walk through history. Therefore, our storytelling system may help fostering historical consciousness within our society.

Keywords—Digital visual storytelling; geolocation; historical personal memories; home movies; urban cinematic archeology.

I. INTRODUCTION

Places are part of our history and if they could speak they would tell us many stories that could be used to better know others and to tie us to memories and places. These stories are very important for the human being because they bring together people and create lasting memories [1]. Indeed, in the past, people used to gather to tell stories.

Today, we are living a different scenario, where human relations pass through social media. People publish and share stories composed of text, images and video and this allows us to know almost everything that surrounds us. Unfortunately, we tend to forget what happened in the past and the younger generations are losing a cultural heritage passed down for generations. However, instead of blaming social media, we can try to exploit the wonderful features they have: for instance, they could be used to connect people to places and places to history; they are in everyone’s pocket; they allow us to talk; they can talk to objects; they can access to unlimited video archives; they can be used to disseminate any type of information. These features can turn them into an appealing alternative to non-visual text-based historical discourses [2] and into a tool to provide new dimensions of understanding and engagement of history [3]. Needless to say, a system able to merge history and modern communication technologies would be able to preserve the past by presenting it in the modern scenario.

Different studies and projects aim at merging history with modern communication technologies. For instance, Procyk and Neustaedter [4] propose a location-based game to support the telling and sharing of stories to enhance knowledge of places among family members and close friends; some projects (e.g., Historypin1, OldNYC2, Streetmuseum3) geolocate historical pictures and place them on a Google maps, allowing people to tour familiar streets to see how they appeared in the past. Pictures are definitely interesting to understand the past, but to further enhance the understanding of the past we must move towards movies.

According to Jenkins [5], the combination of historical video and modern technologies will likely provide a transmedia storytelling system based on layering, diversification, and interconnectivity of media. This system would create a unified and coordinated entertainment experience where, ideally, each medium makes its own unique contribution to the unfolding of the story and thus it would deepen audience engagement by mapping history and by providing a different point of view [5].

One can think that a burden in the realization of this system is the availability of historical video, but it is not. Indeed, the production of personal video is not a novel phenomenon. What is really new is the technology that allows us to produce video contents in a simple and cheap way: people always loved to collect memories and many of them recorded film memories with 8mm or super8mm cameras. Furthermore, inside these film memories, we can find everyday moments (or the exception in daily life) within an urban space and, therefore, these films provide new and particular visions (e.g., geographical, historical, sociological, etc.) of the society. For example, we may think of a father who, for years, films his son playing in a yard on the

1http://www.historypin.org
2https://www.oldnyc.org/
3http://www.museumoflondon.org.uk/Resources/app/you-are-here-app/home.html
outsides of a certain town. Needless to say, the father is interested in filming moments of the child’s life, but the film shows also the changes of the urban space around their daily lives. Indeed, these films are becoming the foundations of the so-called, urban cinematic archeology [6].

Motivated by i) the need to preserve historical memories, ii) the importance of visual documentation, and iii) the need to intercept the attention of the new generations, we design PlayTheCityRE.

PlayTheCityRE is a location-based storytelling system designed to provide an innovative form of understanding the past through modern communication technologies. In particular, the goal is to create an appealing alternative to written narrative-based historical discourses by using recorded film memories and by exploiting the incredible power of current communication technologies. We want to give new life to private film memories shot in 8mm or super8mm and we want to use these films to tell the story of our past. Indeed, these home movies are an incredible source of information, as they represent different views of the same place (e.g., the city) and, thus, they represent a human geography made from the glance of filmmakers [7].

To provide an innovative form of understanding the past, we need to use modern communication technologies like the geolocation ones (e.g., GPS, Wi-Fi triangulation) [8]. Many services use these technologies to facilitate the finding of a good restaurant, of nearby friends, or the reading of local news and weather information [9], [10] and many people use these technologies to produce geolocated contents [11]. By attaching GPS coordinates to home movies, we can link them to current city places, we can place them on a map and, therefore, people can tour streets to see how these places looked like in the past. In this way, our system may engage different audiences in specific ways and on multiple levels, allowing them to walk through history. For instance, the older generations can relive their past, whereas the younger generations can try to understand how was the city at the time of their parents or of their grandparents; historians can watch a past period; urban planners can see how the city has evolved; sociologists can understand the way of life in the different districts of the city.

To test our idea, we focused on the town of Reggio Emilia (171.000 ca. habitants), where there is a large archive of home movies. The archive is the result of different initiatives undertaken in recent years by various institutions (Universities, Private Foundations, etc.), which put together a special working group to enhance movies shot by private citizens. In particular, the archive is composed of more than 500 hours of private films shot in different formats (9.5mm / 16mm / 8mm / Super8) by more than 200 filmmakers.

We selected and edited these 500 hours of video material to produce 120 clips with a time length that varies from 30 to 60 seconds. Then, we attached GPS coordinates to these clips and we designed and developed a multi platform application that places these clips on a map.

By using this application, people can explore an unusual Reggio Emilia through the eyes of amateur film sequences (now historic) and can select different routes that will bring them in the same places where they were filmed. In this way, the application gives users some “backstories” of that place, re-mapping users’ “storyworld” while offering them a different perspective of that location. For instance, when in particular place, people can see how this place looked like in the sixties or even in the WWII, how people lived this place in the past. People can experience a time-machine trip around the city, as they can walk through the city and watch places looked like in the past.

In essence, the developed system provides a transmedia story that may help fostering historical consciousness within our society.

The paper is organized as follows. In Section II we present studies and proposal in the area of digital storytelling; in Section III we present details of our proposal; in Section IV we show some characteristics of the developed application. A brief discussion on the effects that people may experience while using the application is presented in Section V, whereas conclusions are drawn in Section VI.

II. RELATED WORK

Different researches focused on digital storytelling and, in the following, we briefly outline the most recent studies. Shen et al. [12] focused on visual storytelling and presented a video editing system to help authors in the process of scene composition in order to tell a story. Indeed, the user retrieves prerecorded videos by typing free-text stories, and, by interacting with the system, he/she composes the temporal ordering of shots, sequences, and scenes. Adabala et al. [13] proposed a framework to enable the integration of different representations of heritage elements into a holistic entity with the goal of producing a compelling and engaging narration. Bentely et al. [1] proposed a system that enables family members to create and collect geolocated video messages: parents record and locate a video message and their children can track down and view the video in the location it is associated with. The idea is to connect older adults to their children through the sharing of location-based video stories. Procyk and Neustaedter [14] designed a location-based game to support storytelling and to share personal experiences through physical locations with the idea of supporting users in recording and sharing place-based memories; in another work [4] they proposed a location-based game designed to support the telling and sharing of stories in order to enhance knowledge of places among family members and close friends. Klaebe et al. [15] focused on the residential urban development and investigated the role of locally produced and locally relevant contents in the establishment of meaningful social network of urban residents.
III. PROPOSAL

PlayTheCityRE is a storytelling system designed to create an enjoyable alternative to written narrative-based historical discourses. The system aims at providing an alternative form of understanding the past and is based on recorded film memories shot by private citizens and on modern communication technologies. Indeed, by using GPS technologies, we can link these film memories to places so that users, using a mobile device, can observe how the places looked like in the past by simply walking around urban streets. In this way, the system tells part of the twentieth century story through the eyes of its own inhabitants.

We focus on the town of Reggio Emilia (the town of our Department) because it has an archive of more than 500 hours of digitalized home movies, recorded by more than 200 citizens from 1940 to 1989. This archive is composed of film recorded in different formats (9,5mm / 16mm / 8mm / Super8), whose contents vary from daily life to collective rituals, from work to leisure. In general, the films show the city changes through intimate and authentic memories of the last century, in a suspended atmosphere between dream, desire and reality.

To develop PlayTheCityRE, we follow four steps: i) clips selection and production, ii) geolocalization of the produced clips, iii) design of the system architecture and, iv) the development of a mobile app (available for iOS and Android) and of a Web site.

By using PlayTheCityRE, people can walk through the streets of Reggio Emilia and can use their mobile device to watch the “history” of the places they are living.

A. Clips selection and production

The goal of this phase is to select and/or produce informative clips from the 500 hours of digitalized home movies. In particular, we required the clips to have two fundamental characteristics: i) they should represent the town center of Reggio Emilia and its outskirts, and ii) they should have a time length suitable for the mobile scenario. Looking at the home movies, we observed that the demarcation between the town center, the countryside and the outskirts is rather indefinite and changing over the years. In particular, we noted that the perimeters of the town extended over the years (50s and 60s). With respect to the video length, according to the Wistia\(^4\) analysis, we decided to set the maximum length at 60 seconds (for longer videos, we plan to use automatic summarization techniques to short the videos [16], [17]).

In summary, the clips selection and production phase produced 120 clips shot in the town center of Reggio Emilia and in its outskirts. The clips were filmed in a period that goes from 1940 to 1989 and have no audio.

\(^4\)Does Video Length Matter? Available at: https://wistia.com/blog/does-length-matter-it-does-for-video-2k12-edition

B. Clips geolocalization

The goal of the geolocation phase is to attach GPS coordinates to each video clip. To this aim, we asked for help to the filmmakers and/or to the protagonists of the clips. Thanks to their help, all the clips have been localized and contextualized. This allows enjoying the town as it was once. For instance, by localizing the clip of a girl riding a bike (see, Figure 1), we can appreciate how this part of the town has changed. Indeed, the building on the background was the city hospital, today replaced with a residential building. By localization the home movies reported in Figure 4, people can watch how everyday life was at the public park during the WWII and can compare past and present scenario.

C. System Overview

Figure 2 shows the storytelling system. The geolocalized clips are located on a map using GPS coordinates and are streamed to the users using a video sharing platform.

To make the history discovery more pleasant, we allow users to browse for video contents in two different ways: preset or personal mode. The preset mode gives users the possibility to follow specific paths or to deepen specific themes (for example, people may follow predefined routes that take them in specific streets and places). The personal mode gives users the complete freedom to choose what to watch (for example, people can watch specific video by selecting the pin on the city map).

D. Development of a mobile app

To allow a wider use of our system, we have made available the storytelling system via mobile app and via browser. In particular, we have developed the app version for the two major mobile operating systems and we have developed an HTML version to make the storytelling system available through generic web browsers, as described in the following Section.

IV. THE MULTI PLATFORM APPLICATION

The mobile application has to be intuitive, practical and lightweight, so it can be used on mobile devices in an easy way. To this aim, the developed app leans on two platforms: Youtube and Google Maps. In particular, to keep the app light and scalable, the clips are not embedded in the app,
but they are streamed from YouTube; to be intuitive, the app uses Google maps to show places where movies were shot. One may think that these choices represent a burden since it is necessary to have an Internet connection to use the storytelling system. To this aim, it is worth mentioning that the town of Reggio Emilia provides free Wi-Fi in all public spaces and, therefore, the requirement of the Internet connection does not represent a burden for the usage of the system.

In the following, we don’t go into details of the implementation because it is outside the scope of the paper, but we focus on the possible browsing modes.

A. Storytelling through personal modes

Users can access to home movie clips by different personal modes: maps, filmmaker names, places and production year.

- **Maps.** Users can access to the entire set of video clips and can play them out by selecting the specific pin on the map. As shown in Figure 3, users can observe where clips were shot and, by clicking on the pin, a screen-shot preview with some basic information (e.g., clip title, filmmaker name and production year) appears. By clicking on the screen-shot preview, the clip begins. For instance, Figure 4 shows how a clip is played. In addition to the clip, users are provided with some additional information like: clip title, filmmaker name, production year, source type (e.g., 8mm, Super8, etc), location in the nearby, clip description.

- **Filmmaker names.** The 120 clips have been shot by 44 different filmmakers. Users can select the name of the filmmaker and the app shows in the map only the clips filmed by the selected filmmaker.
- **Places.** Users can select a specific place (e.g., a street, a square, a boulevard, etc.) among the 80 predefined. After the selection, the app shows in the map only the clips related to that particular place.
- **Production Year.** Users can select a specific year (e.g., from 1940 to 1989) and the app shows in the map only the clips shot in that particular year.

B. Storytelling through preset modes

Users can access to home movie clips by two different preset modes: themes and routes.

- **Themes.** Home movies have peculiar stylistic features and themes that tend to repeat themselves. We have identified six themes that recur frequently in films shot by amateur filmmakers. Users can select these themes and, after the selection, the app shows in the map only the clips related to that particular theme. The six themes are:
  - Family rituals (e.g., movies shot to record family activities);
  - Everyday life (e.g., movies shot to record everyday life and/or leisure time);
  - Cityscapes (e.g., movies shot in various locations in the city like parks, public gardens, squares, buildings, etc.);
  - Public events (e.g., movies involving citizens in public events with various themes like politics, religion, work, folk festivals, etc.);
  - Sports (e.g., movies concerning sport activities like football, cycling, running, parachuting, etc.);
  - Educational activities (e.g., movies shot to record educational activities carried out in the city of Reggio Emilia).
Figure 4. Playout examples: movie clips are coupled with additional information like clip title, filmmaker name, production year, film source type, locations in the nearby and clip description.

- **Routes.** We identified six different routes that users can select to walk through the city and discover how these routes looked like in the past. Users can select the route and the app shows on a map the clips belonging to this route. By clicking on the clip, the playout begins. The six routes are:
  - Route #1 (The historical route). This route follows the path suggested by many current and past travel guides. By following this path, users can visit some of the most characteristic and historical places of the city;
  - Route #2 (Theater area and public gardens). This route leads to the most visited places by Reggio Emilia citizens;
  - Route #3 (The Via Emilia). This route crosses the city from the southeast to the northwest. The Via Emilia is an ancient Roman street and the city was built around this street;
  - Route #4 (The boulevards). This route leads to the avenues that currently surround the historic area of the city. Today, these avenues are very busy roads, rarely used by pedestrians, but once, these avenues were the borders between the city and the countryside, the perfect place for walking, playing and for doing outdoor activities;
  - Route #5 (The Compagnoni district). This route allows users to appreciate a particular district of the city, built in the late 50s by the Municipality of Reggio Emilia. It was a neighborhood isolated from the rest of the city and developed to host low-income families. As shown by the movies, the neighborhood soon begins to be experienced by the inhabitants and, with the enlargement of the city, it becomes an integral part of Reggio Emilia;
  - Route #6 (The Rosta Nuova district). This route allows users to appreciate a residential district of the city, built in the early 60s.

V. DISCUSSION

The usage of PlayTheCityRE allows people to enter in a participative world, open to hundreds of different life moments and of different people’s perspectives [5]. It is not a simple system for browsing home movies, but the connection to places (thanks to the usage of GPS technologies) transforms the simple network of streets into a network of affective relations, personal memories and social history. Old and dusty moving images are brought back to life and by watching them, people can access to a real fragment of life of other people from the past and, therefore, can access to different time and space cultural layers.

Thanks to the connection between home movies and city places, the houses, the roads and the glimpses of the past come back to life. By re-contextualizing the home movies [18], the world that belonged to our parents and grandparents...
merges the current world to form a cultural semiosis world, where cultural memory overlaps and forgets, loses and finds himself with the result of producing culture [19].

PlayTheCityRE shows the social value of a project of restoration and storage of home movies and, at the same time, it teaches us that memory and identity become part of a universe of (iconic) signs in translation [19].

VI. CONCLUSIONS AND FUTURE WORKS

In this paper, we presented PlayTheCityRE, a location-based storytelling system that merges private film memories shot in 8mm or super8mm with modern communication technologies to tell the story of our past. The motivation behind our proposal was to preserve memories and to intercept the attention of the young generations. The developed application allows people to explore an unusual city through the eyes of amateur film sequences, it allows people to walk through history.

As future developments we are planning to improve the scalability of the system by allowing users to suggest routes, themes and places, to improve the social aspect by allowing users to comment videos and filmmakers; to improve the submission of video material by allowing users to geolocate and tag these materials.

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