Chapter 3.27
Context-Aware Mobile Capture and Sharing of Video Clips

Janne Lahti
VTT Technical Research Centre of Finland, Finland

Utz Westermann[1]
VTT Technical Research Centre of Finland, Finland

Marko Palola
VTT Technical Research Centre of Finland, Finland

Johannes Peltola
VTT Technical Research Centre of Finland, Finland

Elena Vildjiounaite
VTT Technical Research Centre of Finland, Finland

ABSTRACT

Video management research has been neglecting the increased attractiveness of using camera-equipped mobile phones for the production of short home video clips. But specific capabilities of modern phones — especially the availability of rich context data — open up new approaches to traditional video management problems, such as the notorious lack of annotated metadata for home video content. In this chapter, we present MobiCon, a mobile, context-aware home video production tool. MobiCon allows users to capture video clips with their camera phones, to semi-automatically create MPEG-7-conformant annotations by exploiting available context data at capture time, to upload both clips and annotations to the users' video collections, and to share these clips with friends using OMA DRM. Thereby, MobiCon enables mobile users to effortlessly create richly annotated home video clips with their camera phones, paving the way to a more effective organization of their home video collections.

Copyright © 2009, IGI Global, distributing in print or electronic forms without written permission of IGI Global is prohibited.

INTRODUCTION

With recent advances in integrated camera quality, display quality, memory capacity, and video compression techniques, people are increasingly becoming aware that there mobile phones can be used as handy tools for the spontaneous capture of interesting events in form of small video clips. The characteristics of mobile phones open up new ways of combining traditionally separated home video production and management tasks at the point of video capture: The ability of mobile phones to run applications allows video production tools that combine video capture and video annotation. The classic approach of using video annotation tools to provide metadata for the organization and retrieval of video long after capture lacks user acceptance leading to the characteristic lack of metadata in the home video domain (Kender & Yeo, 2000). Context data about video capture available on mobile phones can be exploited to ease annotation efforts, which users try to avoid even at the point of capture (Wilhelm, Takhteyev, Sarvas, van House, & Davis, 2004). Time, network cell, GPS position, address book, and calendar can all be used to infer events, locations, and persons possibly recorded.

Furthermore, mobile phone-based video production tools can combine video capture with video upload and video sharing. With the ability to access the Internet via 2G and 3G networks from almost anywhere, phone users can directly load their clips to their home video collections stored on their PCs or by service providers disencumbering the limited memory resources of their phones. They also can share clips instantly with their friends via multimedia-messaging services. Digital rights management platforms like OMA DRM give users rigid control over the content they share preventing unwanted viewing or copying of shared clips.

However, video management research so far has mainly regarded mobile devices as additional video consumption channels. There has been considerable work concerning mobile retrieval interfaces (e.g., Kamvar, Chiu, Wilcox, Casi, & Lertsithichai, 2004), the generation of video digests for mobile users (e.g., Tseng, Lin, & Smith, 2004), and adaptive video delivery over mobile networks (e.g., Böszörményi et al., 2002), but a comprehensive view that considers the use of mobile phones as video production tools is still missing.

In this chapter, we present MobiCon: a context-aware mobile video production tool. Forming a cornerstone of the Candela platform, which addresses mobile home video management from production to delivery (Pietarila et al., 2005), MobiCon allows Candela users to record video clips with their camera phones and to semi-automatically annotate them at the point of capture in a personalized fashion. After recording, MobiCon extracts context data from the phone and passes it to an annotation Web service that derives reasonable annotation suggestions. These do not only include time- or position-based suggestions such as the season, city, or nearby points of interest possibly documented by the video; they also include personal calendar- and address book-based suggestions such as likely documented events and known locations like a friend's house. Besides these suggestions, the user can select concepts from a personal ontology with little manual effort or enter keywords for additional annotation.

MobiCon is further capable of uploading clips and their annotations to the users' private video collections in Candela's central video database directly after capture and permits users to immediately share these clips with friends, granting controlled access via OMA DRM.

Thus, MobiCon enables mobile phone users to create and share richly annotated home video clips with little effort, paving the way towards the more effective organization of their home video collections. The extensible architecture of the annotation Web service allows us to embrace and incrementally integrate almost any method for the generation of annotation suggestions based

14 more pages are available in the full version of this document, which may be purchased using the "Add to Cart" button on the publisher's webpage:
www.igi-global.com/chapter/context-aware-mobile-capture-sharing/26571

Related Content

A Novel Prediction-Based Location Management Technique for Mobile Networks
Sanjay Kumar Biswashand Chiranjeev Kumar (2013). *International Journal of Mobile Computing and Multimedia Communications (pp. 15-34).*
www.irma-international.org/article/a-novel-prediction-based-location-management-technique-for-mobile-networks/103967

Virtual EZ Grid: A Volunteer Computing Infrastructure for Scientific Medical Applications
Mohamed Ben Belgacem, Nabil Abdennadherand Marko Niinimaki (2012). *International Journal of Handheld Computing Research (pp. 74-85).*
www.irma-international.org/article/virtual-grid-volunteer-computing-infrastructure/64366

A Probabilistic Routing Protocol in VANET
Gongjun Yan, Stephan Olariuand Shaharuddin Salleh (2010). *International Journal of Mobile Computing and Multimedia Communications (pp. 21-37).*
www.irma-international.org/article/probabilistic-routing-protocol-vanet/47329

Mobile Telephony, Public and Private Planning and Regulation: A UK Perspective
Deborah Peeland Greg Lloyd (2011). *ICTs for Mobile and Ubiquitous Urban Infrastructures: Surveillance, Locative Media and Global Networks (pp. 150-169).*
www.irma-international.org/chapter/mobile-telephony-public-private-planning/48349

Online Authentication Using Smart Card Technology in Mobile Phone Infrastructure
Teddy Mantoro, Admir Milišicand Media Ayu (2011). *International Journal of Mobile Computing and Multimedia Communications (pp. 67-83).*
www.irma-international.org/article/online-authentication-using-smart-card/58906