# Mobile Augmented Reality: Design, Prototyping and Evaluation

**Marco de Sa**
Internet Experiences Group
Yahoo! Research
Santa Clara, CA 95054 USA
marcosa@yahoo-inc.com

**Elizabeth F. Churchill**
Internet Experiences Group
Yahoo! Research
Santa Clara, CA 95054 USA
churchill@acm.org


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## Abstract
Mobile devices have increasing computational power. Their sophistication in terms of network access, content rendering and interactivity, and data gathering is growing. Sensors such as microphones, cameras, gyroscopes, and accelerometers are routinely available and devices are enhanced with a various output modalities from visual to sound to vibroctactile. It is thus already possible for us as designers and developers to enhance the way people encounter content, create and experience content and express themselves. With improved access to Internet data service, including location-based services, we are able to build applications and services that profoundly shift the way people interact with their local environment– there are many opportunities to augment, enhance and transform people's experience of physical reality. This workshop will address emerging design techniques for Mobile Augmented Reality (MAR) applications. We invite designers, developers, users and evaluators of augmented and mobile augmented reality applications and/or those interested in augmented location-based services to submit papers that consider the opportunities and challenges of designing effective, engaging and usable augmented reality services and applications for mobile devices.

**Keywords**
Augmented Reality; Mobile devices; Design; HCI.

**ACM Classification Keywords**
H.5.2 [Information Interfaces and Presentation]: User Interfaces; H.5.1 [Information Interfaces and Presentation]: Multimedia Information Systems;

## Theme description and goals

As mobile devices, smart-phones in particular, grow in power and features richer experiences such as augmented reality become possible and are now growing and spreading through the mobile app markets. This is potentiated on the one hand by the hardware advancements from initial experiments [1][3] and, on the other hand, the new marketing approaches and app stores. While the former has been evolving and shrinking in size, the latter have opened doors for the imagination of such a wide amount of developers and designers that we are now witnessing an amazing amount of apps being released daily for a wide variety of purposes (see http://www.mobileaugmentedreality.info/ for updated reviews of example apps). However, although it is estimated that augmented reality by itself will play a major role within the mobile future [8], such recent trend has yet to fulfill its full potential and available examples, both commercially or within the available literature, rarely focus on the user experience, are strongly tied to visual augmentation and, for its majority, rely more on their looks than on usefulness [9]. Moreover, research wise, most efforts are directed and focused on the technological and technical [4][7][6] achievements along with the physical constraints [2][5] that shape how users retrieve information from and laid over the world.

We, on the other hand, envision a world where mobile augmented reality will be centered on users' daily activities and their perception of what and who surrounds them. With this workshop, we aim to continue exploring not only how information can be accessed by augmenting the objects, the people and terrain, but also the activities that take place wherever we go and how mobile augmented reality can play a part on enhancing them. Building on the results from the previous workshop, we will address the major challenges in design for such rich experiences and discuss new and innovative approaches that participants have applied on their work. It is our goal to explore how mobile augmented reality can:

- Be designed and which of the current mobile interaction design techniques can or should be used.
- Be used as a vehicle to promote production of content and inclusion as a way to shape realities that better suit the needs of users around the world.
- Serve as a window that offers users the ability to increase perception of reality without distracting or hindering activities at hand.
- Trigger, promote and support ad-hoc in-situ cooperation scenarios.
- Use different modalities to increase immersion within the real world, making use of the currently available technology (e.g., smart-phones, Pico-projectors, multi-gestures, gesture-recognition).
- Serve as a platform for new experiences and applications (e.g., health, art, entertainment).

## Accepted Submissions

List of accepted papers.

- **weShopAR: A Vision for Augmenting the Retail Store Experience** by Brian M. Landry and Kelly Dempski
- **Indirect Augmented Reality, Situated Simulations and Situated Learning** by Gunnar Liestøl and Andrew Morrison
- **evoGuide: How To Apply Augmented Reality To Guiding People Through Industry Environments?** By Elisabeth Pergler and Hannes Walter and Christian Kittl
- **Augmenting Shared Workspaces with Unmediated Gestures for Mobile Remote Collaboration** by Weidong Huang and Leila Alem
- **Playing Together: Supporting Children- Played Outdoor Location-based Handheld Augmented Reality Game Deployments** by Raymond Koon Chuan Koh and Henry Been-Lirn Duh and Cheng-Ho Chen and Yun-Ting Wong
- **Seamless Augmented Reality Support On The Shopfloor Based On Cyber- Physical-Systems** by Dominic Gorecky and Ricardo Campos Garcia and Gerrit Meixner

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