

Computer Vision for Augmented Reality on Mobile Platforms

Matti Johannes Eskelinen

PhD Student

University of Jyväskylä, Faculty of Information Technology

Department of Mathematical Information Technology

Agora C414.1, P.O.Box 35, 40014 University of Jyväskylä, Finland

matti.j.eskelinen@jyu.fi

Abstract

The near-unlimited mobility, onboard sensors and cameras, and big screens make modern smartphones suitable for developing augmented reality applications. Traditionally, augmented reality research has concentrated on utilizing physical markers for registering camera pose. However, increasing processing power and memory of mobile devices will sooner or later allow using more sophisticated computer vision techniques to analyse the scene visible in camera image. In this presentation, first a general description of mobile augmented reality systems is given. Then the key computer vision techniques suitable for use in them, like interest-point based tracking, scale-space methods, and probabilistic localization and mapping, are presented briefly. Key challenges are analyzed. Finally a vision is formulated of a framework for processing dynamic camera stream into a representation suitable for recognizing interesting objects in the scene. This vision forms the long-term research goal of the author. Also some initial results and examples will be presented as time permits.