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Subject Area	Software and Systems

Osmand for Android Wear and Apple Watch

Pedestrian Navigation for Smartwatches

OsmAnd app for Apple Watch.

Manual location request by using "force touch".

Map of the current location. By using the digital watch crown one can zoom in and out.

Introduction: Smartwatches are more and more the go-to gadgets of today. However, there are areas of application which are not yet widespread like pedestrian navigation. An app on the wrist is highly available and allows to show one's location on a map at a glance. And even more: the app can give directional information and navigation instructions. In a prior work, the feasibility of such a type of navigation has been proven and a prototype named SmartNaviWatch has been implemented for the well known offline navigation app Osmand.

Approach/Technologies: This thesis includes work in the following areas: Firstly, some improvements in the Android Wear app needed to be done, of which the main extension is the rotation of the rendered images on the watch in the walking direction. Secondly and most importantly, a prototype client app for the new Apple Watch needed to be implemented from scratch.

Result: The new OsmAnd iOS app, which acts as the watch app host, still has limited features. Moreover, Apple Watch apps are restricted by the Apple watchOS in general. Despite these restrictions, the prototype could implement 1. a map rendering from different sources (base maps from OsmAnd), 2. a reverse geocoding («Where am I?») and 3. a basic navigation mode («Show me the direction!»). The typical Apple Watch design patterns have been respected in order to create a good user experience. Early field tests promise to deliver an intuitive way of quickly getting one's position and orientation. Future advancements of the still young WatchKit SDK will provide more APIs and better hardware access. This will enhance the user experience even more. In terms of true navigation, there is still room for improvement. However, a solid basis has been provided. And with the soon to be released offline routing navigation functionality coming to OsmAnd for iOS, only little modifications have to be made in order to integrate this on the watch app. Finally, this Apple Watch app has been submitted to the project maintainers in order to deploy it as part of OsmAnd for iOS.