

Localization with activity recognition and particle filter

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I. INTRODUCTION

The Localization was split into two parts, the first part was an Activity recognition and the second part was the localization Algorithm with the Particle Filter. The Activity recognition was implemented with an k-Nearest Neighbor(k-NN) algorithm. It was used to classify if the user is moving or not.

II. ACTIVITY RECOGNITION

The mobile phone has many sensors. Some of them can be used to track the activity of a person. After collecting sensor data the patterns in the data can be retrieved and can be used to classify between activities e.g jogging, running, walking.

A. Tensorflow approach

Our first approach was to use the popular tensorflow framework from Google. The idea was to train and write the code in python and export a tensorflow model which can be used by our mobile phone. The training data was taken from the Wireless Sensor Data Mining group. [?] The `IEEEtran` class file is used to format your paper and style the text. All margins, column widths, line spaces, and text fonts are prescribed; please do not alter them. You may note peculiarities. For example, the head margin measures proportionately more than is customary. This measurement and others are deliberate, using specifications that anticipate your paper as one part of the entire proceedings, and not as an independent document. Please do not revise any of the current designations.

B. K-NN approach

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Particle Filter

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Optimizations particle filter

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