The Contextual Map - A Context Model for Detecting Affinity between Contexts

Abstract:
Context-awareness represents an important research domain in mobile computing by utilizing information about persons, places and objects anytime and anywhere. The highly dynamic contexts created by this paradigm raise questions how to efficiently determine alikeness and affinity between such contexts. Inspired by mechanisms from location-aware computing, we tackle the issue of contextual proximity by constructing an n-dimensional map-model, which serves as a context model for regular context repositories. This Contextual Map enables us to store non-location contexts in a map-based way. Further, this model enables us to conduct location-based n-dimensional proximity detection on the non-location contexts, hence giving us the possibility to determine contextual proximity. This paper introduces the contextual map model, describing how principles from the location-based service domain can be leveraged on general context-aware computing and how they can be employed to detect affinities between different contexts.