

**Abstract:**

Indoor positioning and tracking services are garnering more attention. Recently, several state-of-the-art localization techniques have been proposed that use radio maps or the sensors readily available on smartphones. This paper presents a localization system called Indoor Localization using Physical maps and smartphone Sensors (ILPS), which is based on a building blueprint database and smartphone sensors. The blueprint database and access points (APs) provide a number of reference points that can be used to acquire the initial position and adjust the user position each time a reference point is detected. The proposed method is implemented on a smartphone and tested in real indoor environments. The experiments with ILPS demonstrate that using a static blueprint will avoid the costly database updates that are usually required in other approaches due to signal attenuation. Furthermore, ILPS performs better than existing work in term of accuracy and effectiveness for indoor localization.