

Abstract

Data association or correspondence problem is one of the major problems faced by any state estimation algorithm. This paper introduces a multi-dimensional assignment based data association algorithm for simultaneous localization and map building (SLAM) problem in mobile robot navigation. Data association in SLAM problem is compared with the data association in a multi-sensor multi-target tracking context and a two frame assignment based data association algorithm is proposed. Simulations and experiments were conducted to compare the performance of the new data association scheme over the conventional nearest neighbor data association algorithm in the presence of high clutter densities.