無線感測網路中使用RSSI及路徑資訊之定位演算法

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摘 要

在無線感測網路領域上，近年來已經有許多提出的定位演算法，並且這些演算法會在網路範圍中，將節點以隨機方式或固定方式分布，而當中一部分節點當作未知節點，其餘少部分當作已知節點，藉由這些節點分配去執行定位演算法進行定位。這些定位演算法主要可分為兩大類Range-based 和Range-free。其中Range-based：主要去求距離和角度為主位置估算的方法，不過需要一些昂貴設備來提高精準度，所以會大幅度提高成本，另一種Range-free：雖然不需要求距離和角度，不過在精準度上相對誤差較大，然而相較之下成本可以大幅度降低。其中兩者方法都需要搭配全球定位系統設備進行定位。 本篇論文，主要提出RP (RSSI based path-aware) 定位演算法並且以不提高成本方式來進行定位，該演算法主要是結合：Received Signal Strength Indication (RSSI)接收訊號強度測量特性、DV-hop測距特性、Angle of Arrival (AOA)兩點定位特性、最佳路徑篩選的方式來進行定位。首先在網路範圍中，先給予所有節點一個編號，然後將網路範圍分割成幾個區塊範圍，再經由每個區塊範圍中的錨節點所跑的路徑集合在表單中，作篩選，並且從表單中選出最佳路徑，再來經由RSSI、DV-hop來獲得節點與節點之間的距離，並且將獲得節點之間的距離搭配最佳路徑去進行定位，其中該演算法只需要兩個錨節點，就能進行定位。最後模擬比較我們提出RP定位演算法與DV-hop定位演算法的定位誤差，得到結果該RP定位演算法在定位誤差上比DV-hop低，所以藉由該方法來降低定位誤差並且提高定位精準度。

關鍵詞 : 接收訊號強度、訊號接收角度、距離測量、最佳路徑、定位

目錄

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