基于BMP085气压传感器及BP算法的高度测量研究与实现

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摘　要：

本文采用BMP085气压传感器，研究并实现了采用Back-propagation (BP) 神经网络自学习的相对高度测量方法。首先，利用BP算法学习带有测量基点（一般为地面）的训练样本集，得到稳定、精确的测量网络；其次，将测量点的温度与压强作为测量网络的输入，由测量网络计算出垂直方向上测量点与基点的相对高度。实验表明，相比传统的标准气压高度公式计算的相对高度，本文提出的测量系统能更准确地计算出相对高度，且能减少环境因素变化的影响（即，具有良好的稳定性）。

关键词：BMP085气压传感器；相对高度测量；BP神经网络；标准气压高度公式

Study and Implementation of Relative Height Measurement Based on BMP085 and BP Algorithm

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Abstract:

This paper studies and implements a measurement system of relative height based on the practical pressure sensor (i.e., BMP085) and back-propagation (BP) neural network self-learning algorithm. Firstly, the measurement system of relative height equipped with the BP algorithm can learn the given training sample set with the measurement base point given (generally the ground) and minimal square error obtained. Secondly, the resultant measurement system can calculate the relative height with the pressure and temperature measured in real time, which is obtained by the BMP085. Finally, related experimental results show that the proposed measure system of relative height has better performance as well as reducing impacts of environments (i.e., having the stability), as compared with traditional relative height measurements.

Keywords: BMP085 pressure sensor; relative height measurement; BP neural network; standard pressure height formula

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