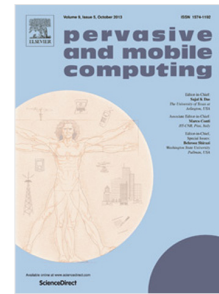


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Cyber-Physical Systems: Extending pervasive sensing from control theory to the Internet of Things

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ABSTRACT

Essentially, the emerging term “Cyber-Physical Systems (CPS)” is an architectural paradigm in which the pervasive sensing technologies represent a fundamental part. Originally defined in the computer sciences domain, the term Cyber-Physical Systems has been adapted to very different domains such as the control theory or electronic engineering. Even, some authors understand CPS as a particular scenario of the Internet of Things (IoT) based on pervasive sensing. Furthermore, recently, some works propose a definition for CPS including all the features described in the different domains. In this paper we provide a comprehensive analysis of the nature and characteristics of the different proposals, discuss the recent attempts to standardize CPS, and review the state-of-the-art on CPS for each technological domain. We compare those different proposals on CPS, discuss about some related terms and technologies and conclude by describing the main research challenges in the area.

KEYWORDS

Cyber-Physical Systems; Pervasive Sensing; Machine-to-Machine; Wireless Sensor Networks; Hybrid systems; Internet-of-Things; Data services; Pervasive computing

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