Applications of the Internet of Things (IoT) in Smart Logistics

RESUMO

developing smarter approaches to improve logistics efficiency and reduce logistics costs, in both academia and industry, is a timely and important topic nowadays.

APPLICATIONS OF IoT IN SMART LOGISTICS: COMPREHENSIVE SURVEY: P. Mell and T. Grance, The NIST

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ABSTRACT

solve these problems. As one of the important technologies of the modern information and communication technology (ICT), the Internet of Things (IoT) can create oceans of data and explore the complex relationships between the transactions represented

technologies for IoT in smart logistics. Furthermore, we review how IoT technologies are applied in the realm of smart logistics from the perspectives of logistics transportation, warehousing, loading/unloading, carrying, distribution processing, distribution, and information processing. Finally, some challenges and future directions are discussed. Index Terms—Internet of Things (IoT), smart logistics, wireless communication. I. I Resumo em inglês.

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1 INTRODUÇÃO

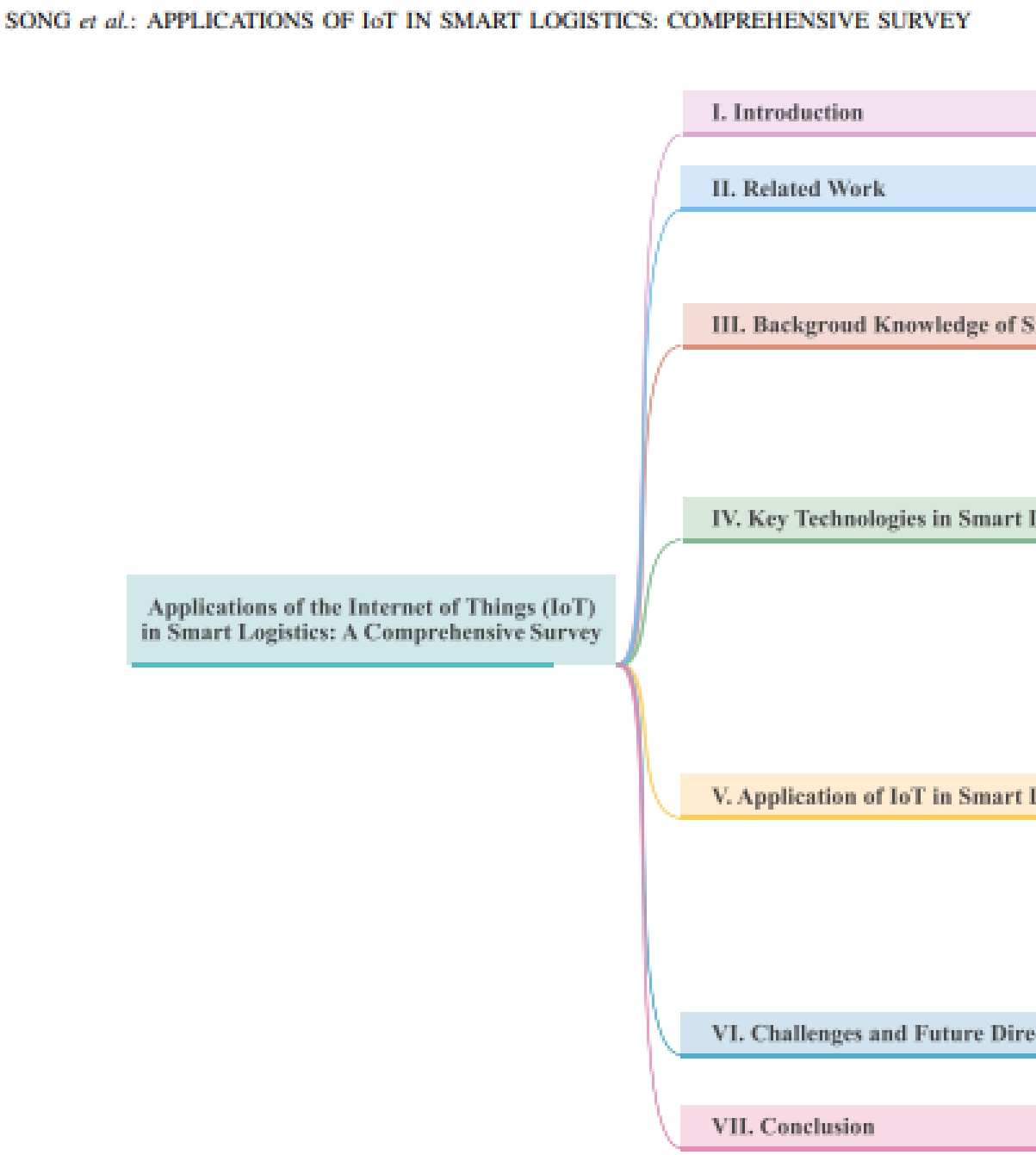
However, on account of the complex supply chains and high labor costs, the costs of logistics are still at a relatively high level. For example, as one of the high efficient countries in terms of logistics, U.S. spent

1.1 Revisão da Literatura

1. Roadmap of IoT in smart logistics. roadmap that considers the related issues in the conjunction of these two areas more comprehensively. The main contributions of this article are as follows. 1) We investigate the state-of-the-art researches on smart logistics and IoT technologies, summarize and analyze

functions, and key technologies of smart logistics. 3) We further discuss enabling technologies for IoT the current situation and Figura 1

Figura 1 – Exemplo de figura



Fonte:

Ferreira et al. [10] reviewed the main technologies of IoT associated with automated support of business processes in logistics. They introduce smart items, including RFID and WSN. Then, they focus on IoT-based support of design and runtime changes considering dynamic changes in business processes. In this survey, IoT is detailed only from smart logistics information processing (e.g., business processes), and

distribution center as a real-world scenario to illustrate the development of CPLS. Although the survey illustrates the detailed solutions of IoT in smart logistics combining with practical application scenarios, it pays no particular attention to challenges of IoT in smart logistics and the impact of new key technologies on smart logistics. Trappey et al. [14] surveyed the literature related to the technologies of IoT that include RFID, WSN, and cloud computing. The construction and the applications of

questions. Paper [13] introduces the application of IoT in the related fields on the basis of the theories of IoT, analyzes the effect of IoT on logistics information in logistics service supply chain (LSSC), builds the architecture of LSSC based on IoT, and forecasts the application prospect. This survey details

data exchange. Unfortunately, the authors only focus on the analysis and applications of the key technologies of IoT, neglecting many other important key technologies of IoT and their impact on smart logistics, such as RFID, WSN, and artificial intelligence (AI). Lee and Lee [16] presented five IoT technologies (RFID,

In [17], some information processing technologies are used to enhance the design and evaluation of city logistics schemes1

(1)

offering a classic survey, our intent is to organize the aspects of smart logistics systematically and present a roadmap for applications, challenges, and the future of IoT technologies in these aspects. Compared to other surveys, our version is more convenient and clear for the readers to understand. III. BACKGROUND KNOWLEDGE OF SMART LOGISTICS Smart logistics is an inevitable trend in the development of modern logistics, the research topic of which has attracted a lot of attention from academia and industry. In this section, we introduce the knowledge about smart logistics briefly from definition, evolution, basic functions, and solutions. A. Concept

nd evaluation of city logistics schemes.

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