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Chapter 1

Device Search and Selection

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Cyber-physical systems (CPS) represent the expansion in computerized interconnectivity. This phenomenon is also moving towards the Internet of Things (IoT) paradigm. Searching functionality plays a vital role in this domain. Many different types of search capabilities are required to build a comprehensive CPS architecture. In CPS, users may want to search smart devices and services. In this chapter, we discuss concepts and techniques related to device search and selection. We briefly discuss different types of device searching approaches where each has its own objectives and applications. One such device searching technique is context-aware searching. In this chapter, we present context-aware sensor search, selection and ranking model called CASSARAM in detail. This model addresses the challenge of efficiently selecting a subset of relevant sensors out of a large set of sensors with similar functionality and capabilities. CASSARAM takes into account user preferences and considers a broad range of sensor characteristics, such as reliability, accuracy, location, battery life, and many more. Later in the chapter, we discuss three different techniques that can be used to improve the efficiently of CASSARAM. We implemented the proof of concept software using Java. Testing and performance evaluation results are also discussed. We also highlight open research challenges and opportunities in order to support future research directions.

platform is yet to be achieved by the research community. Addressing the open challenges mentioned in the previously will help to move towards that direction.

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