Handbook of Ambient Intelligence and Smart Environments

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Editors

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Springer

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Ambient Intelligence and Smart Environments: A State of the Art

Juan Carlos Augusto, Hideyuki Nakashima, Hamid Aghajan

1 Introduction

Advances in the miniaturization of electronics is allowing computing devices with various capabilities and interfaces to become part of our daily life. Sensors, actuators, and processing units can now be purchased at very affordable prices. This technology can be networked and used with the coordination of highly intelligent software to understand the events and relevant context of a specific environment and to take sensible decisions in real-time or *a posteriori*.

AmI is aligned with the concept of the *"disappearing computer"* [23, 24, 22]:

> *"The most profound technologies are those that disappear. They weave themselves into the fabric of everyday life until they are indistinguishable from it."*

It is particularly interesting to contrast this time in history when accomplishing Weiser's aims sounds plausible with the situation five decades ago when computers had the size of a room and the idea of a computer being camouflaged with any environment was an unimaginable notion. Today different appliances have successfully become integrated to our daily life surroundings to such an extent that we use them without consciously thinking about them. Computing devices have transitioned in this past half a century from big mainframes to small chips that can be embedded in a variety of places. This has allowed various industries to silently distribute computing devices all around us, often without us even noticing, both in public spaces and in our more private surroundings. Now washing machines, heating systems and even toys come equipped with some capability for autonomous decision making. Auto-

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