Part II
Research Directions Under CogInfoCom

This part provides an overview of those research areas that are either in a synergic relationship with CogInfoCom, or have emerged as a result of the unique perspectives and research efforts represented by the field. A wide range of research areas are treated here, and it is important to bear in mind that all of them are multifaceted and constitute individual research domains in their own right. At the same time, all of them incorporate at least some aspect that makes them relevant to the use or support of cognitive capabilities in infocommunications. For this reason, a discussion on how they may contribute to CogInfoCom is well justified.

In Chap. 4, several key points of synergy are discussed from the perspective of existing research fields relevant to the merging process between humans and ICT. In particular, relationships with the fields of *affective computing*, *augmented cognition*, *body area networks*, *brain-computer interfaces*, *cognitive informatics*, *cognitive networks and Future Internet*, *HCI and multimodal interaction*, *sensory substitution*, *social signal processing*, *virtual and augmented avatars* and *virtual and augmented reality* are considered. It is important to emphasize that while all of these fields have their own motivations and unique set of methodologies, primarily those aspects are highlighted which represent opportunities for synergy with CogInfoCom.

In Chap. 5, an overview is provided of three key research areas which have emerged through the influence of CogInfoCom. In particular, the areas of *CogInfoCom channels*, *speechability* and *socio-cognitive ICT* are considered. Research efforts and results relevant to these areas are presented from a perspective that focuses on a set of generic techniques referred to as iconic, context-based and pattern-based. The purpose of this discussion style is to highlight possibilities for the unified treatment of challenges relevant to the entanglement between humans and ICT. It should be noted that a detailed treatment of CogInfoCom channels is provided later in Part III of the book.

Finally, in Chap. 6, several new initiatives are described which have been proposed at the various scientific fora on CogInfoCom to guide future research in the field. Specifically, areas relevant to *augmented virtual reality mediated neuroscience research*, *ergonomics of augmented virtual collaboration*, *ethologically informed*

CogInfoCom (EtoCom), *CogInfoCom-aided industrial engineering* and *augmented mathematical capabilities (mathability)* are addressed. Although the initiatives discussed here represent future directions in much the same way as the fields detailed in the previous chapter, they are nevertheless treated separately for the reason that they are still relatively young, and continued research is expected to lead to significant developments in their scope and goals. Regardless, the fact that they were proposed and exist in their current form reflects well the interdisciplinary outlook that is promoted by the CogInfoCom conference series.