

SMIAE 2012

**Proceedings of the 1st Workshop on Speech and Multimodal
Interaction in Assistive Environments**

July 12, 2012
Jeju, Republic of Korea

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ISBN 978-1-937284-31-2

Preface

In recent years considerable progress has been made in speech processing and interaction as well as in multimodality. However, the application field of Assistive Environments has only recently become a focus for the speech and multimodality research community.

This workshop focuses on issues, applications, and development tools in the field of Speech and Multimodal Interaction in Assistive Environments (SMIAE). It is concerned with all topics which fit within the purview of speech and multimodal communication in environments suitable for the elderly and people with age-related physical or cognitive disabilities. Assistive environments are an application area of the research field of Ambient Assisted Living (AAL).

This research field is supported through a European technology and innovation funding programme, which promotes intelligent assistant systems for a better, healthier, and safer life in the preferred living environments through the use of Information and Communication Technologies (ICT). Human-computer and human-robot interaction are key technological tools in the area of Assistive Environments, and as such the workshop particularly aims to draw together speech and multimodal work in these areas. Moreover, we are delighted to have both theoretical and applied computational work regarding multimodal interaction in assistive environments at this workshop, including research fields like robotics, virtual environments, sociable agents, gesture, games, and mobile computing.

Dimitra Anastasiou
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Cui Jian
Robert Ross

May 2012

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Pat Tun, Brandeis University Memory & Cognition Lab
Maria Wolters, University of Edinburgh
Wolfgang Zagler, Vienna University of Technology

Invited Speaker:

Mikio Nakano, Honda Research Institute Japan

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Workshop Program

- 9:00–9:10 Welcome and Introduction
- 9:10–10:00 Keynote: Robots that can learn new words and their grounded meanings through dialogues. Mikio Nakano
- 10:00–10:30 *Multimodal Human-Machine Interaction for Service Robots in Home-Care Environments*
Stefan Goetze, Sven Fischer, Niko Moritz, Jens-E. Appell and Frank Wallhoff
- 10:30–11:00 Coffee Break
- 11:00–11:30 *Integration of Multimodal Interaction as Assistance in Virtual Environments*
Kiran Pala, Ram Naresh, Sachin Joshi and Suryakanth V Ganagshetty
- 11:30–12:00 *Toward a Virtual Assistant for Vulnerable Users: Designing Careful Interaction*
Ramin Yaghoubzadeh and Stefan Kopp
- 12:00–12:30 *Speech and Gesture Interaction in an Ambient Assisted Living Lab*
Dimitra Anastasiou, Cui Jian and Desislava Zhekova
- 12:30–14:00 Lunch Break
- 14:00–14:30 *Reduction of Non-stationary Noise for a Robotic Living Assistant using Sparse Non-negative Matrix Factorization*
Benjamin Cauchi, Stefan Goetze and Simon Doclo
- 14:30–15:00 *Towards a Self-Learning Assistive Vocal Interface: Vocabulary and Grammar Learning*
Janneke van de Loo, Jort F. Gemmeke, Guy De Pauw, Joris Driesen, Hugo Van hamme and Walter Daelemans
- 15:00–15:30 *A Bengali Speech Synthesizer on Android OS*
Sankar Mukherjee and Shyamal Kumar Das Mandal
- 15:30–16:00 Coffee Break
- 16:00–17:30 Discussion and Conclusion

