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Multi-channel hierarchical modeling with applications in speech and multimodal processing

DATE: April 1, 2005

TIME: Refreshments served at 1:45pm with talk to follow.

LOCATION: 432 Computer Science Building at UCI

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Faculty Sponsor: Professor Ramesh Jain



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This talk will start with a brief presentation of IDIAP, mainly focusing on its activities in multimodal processing, with particular emphasis on our “Smart Meeting Room” activities and related large database collection and distribution activities (see, e.g., mmm.idiap.ch)

In this framework, and after a brief discussion of the problem arising from the processing and modeling of multi-channel/multi-sensor signals, we will discuss a few statistical structures that can (1) deal with multiple observation streams (possibly asynchronous, with different frame rates, etc), and (2) accommodate hierarchical structures, thus integrating multi-layer knowledge sources in a principled way.

Different applications in speech and multimodal processing benefiting from the proposed approaches will be discussed, including:

- Speech recognition
- Audio-visual speech recognition
- Modeling of human interaction in meetings (by modeling the joint behaviors of participants through multiple audio and visual features).

Bio:

Hervé Boulard received the Electrical and Computer Science Engineering degree and the PhD degree in Applied Sciences both from “Faculté Polytechnique de Mons”, Belgium. After having been a member of the Scientific Staff at the Philips Research Laboratory of Brussels and an R&D Manager at L&H Speech Products, he is now Director of the IDIAP Research Institute (www.idiap.ch), Full Professor at the Swiss Federal Institute of Technology at Lausanne (EPFL), and Director of a National Centre of Competence in Research in “Interactive Multimodal Information Management” (IM2, www.im2.ch). Having spent (since 1988) several long-term and short-term visits, as a Guest Scientist at the International Computer Science Institute (ICSI, www.icsi.berkeley.edu) in Berkeley, CA, he is now an ICSI External Fellow and a member of the ICSI Board of Trustees.

H. Boulard is the author/coauthor/editor of 4 books and over 190 reviewed papers (including one IEEE paper award) and book chapters. He is an IEEE Fellow “for contributions in the fields of statistical speech recognition and neural networks”. He is (or has been) a member of the program and/or scientific committee of numerous international conferences (e.g., General Chairman of IEEE Neural Networks Signal Processing 2002, General Chairman of Eurospeech’2003) and journals, and past co-Editor-in-Chief of the “Speech Communication” journal.

Over the last 20 years, H. Boulard has initiated and managed numerous large collaborative projects, and more recently became the coordinator of a large European Integrated Project (AMI: Augmented Multiparty Interaction). He is also part of the European ISTAG (Information Society Technology Advisory Group).

His main interests are in signal processing, statistical pattern classification, multi-channel processing, artificial neural networks, and applied mathematics, with applications to speech processing, speech and speaker recognition, language modeling, computer vision, and multimodal processing.