

EU SUPPORT FOR ADVANCED SIGNAL PROCESSING SYSTEMS AND APPLICATIONS

Introduction

There is an ever increasing range of signal processing applications in everyday life where the technology itself is embedded and hidden from the user. This is perhaps best exemplified through recent television advertisements of DSP technology by a mainstream chip vendor on an international news channel. DSP technology has gained prominence over the past decade, through the improving price/performance of key components as well as the promotion of standardisation.

The European Commission's Information Society Technologies (IST) Programme deals with collaborative EU research and technological development. Signal processing is recognised as a core technology which deserves to be supported within this programme. Europe is relatively strong in developing signal processing applications and algorithms. However, on the device technology front, Europe is strong on sensors and conversion devices but has a limited presence in processing devices. The main idea behind this action is to enhance European strengths and address the weaknesses across the spectrum of signal processing technologies, including: applications, algorithms, devices and tools.

Applications

The major application areas of interest are derived from the core activities of the IST programme. Biomedical applications include ultrasonic echography, multi-modal imaging as well as devices for healthcare and special needs. Media is a wide area where there is a strong interest in video, imaging, music, speech and language engineering. The communication domain includes fixed, wireless and navigation. Security is an emerging area within the programme, where content protection and the enhancement of electronic commerce are key issues.

Algorithms

The algorithms which underpin the applications are diverse and challenging. Algorithms are generally realised via codecs. Research is encouraged in emerging "killer codecs" to deliver the performance for advanced applications. A wide range of topics are addressed: physical modelling, multidimensional filtering, neural networks, wavelets, chaos theory, recognition, synthesis, watermarking and cryptography. This list is not exhaustive and other topics such as array processing or randomised processing may be considered. Some examples of "classical codecs" encountered in everyday life today include: jpeg, mpeg (video & audio), V90, GSM, RSA etc. These are largely based on filtering, coding, compression and modulation. In addition to implementing the algorithms, codecs are expected to exhibit certain properties: adaptive, real-time, secure and robust with graceful degradation and error recovery. Codecs may be required to support multiple data rates, data fusion and handle large data sets.

Devices

The algorithms are implemented in embedded systems with innovative approaches to device technologies including: architectures, systems on a chip and FPGAs. Signal processing functionality is increasingly found in acquisition devices and sensory subsystems such as: smart sensors, sensor arrays, conversion devices (analogue/digital conversion) and biometric devices. Devices are expected to have the following properties: low power, high performance, reconfigurable and portable with small footprints.

Support activities

The action will promote open approaches to standards, methodologies and tools. These include languages, real-time operating systems, open cores and reusable blocks. Initiatives to promote the sharing of knowledge in the field of signal processing are encouraged.

How to apply

The IST Programme publishes an annual workprogramme which describes all of its activities. This core document essentially contains grouped sets of actions, known as action lines. More specifically, the action line on signal processing is called CPA 13: Advanced signal processing systems and applications. The CPA is a Cross Programme Action which means that it spans across various areas of the IST Programme, thereby making it more accessible to the research community.

Proposers are invited to submit proposals covering at least two of the areas covered by this action: applications, algorithms, devices and tools. Proposers generally form a consortium of partners who collectively submit the research proposal. A partner search service is available on a Commission database server. Proposals are formally evaluated by the Commission using independent experts. The results are communicated back to the proposers soon afterwards. The call for proposals will be published in June with a deadline for submission at the end of September 2001 ■

Javid Khan holds a Masters in Microelectronics and a Masters in Telecommunications from UMIST (University of Manchester Institute of Science and Technology) in the UK. He formerly worked at the Philips Advanced Development Center and Philips Telecom on realtime signal processing for multimedia and mobile radio applications. Since 1997, he has been employed at the European Commission as a Scientific Officer working within the Information Society Technologies Programme. His main research activities are in microelectronics for telecoms and networking, as well as other embedded systems projects. He is also responsible for strategic research planning and public relations events.

Further details

Further details can be found below. The views expressed in this document are those of the author only and do not necessarily reflect those of the European Commission.

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| · http://www.cordis.lu/ist/cpt/cpa13.htm | CPA 13: Advanced signal processing systems and applications |
| · http://www.cordis.lu/ist/ | IST Programme |
| · http://www.cordis.lu/ist/workprogramme.htm | IST Workprogramme 2001 |
| · http://dbs.cordis.lu/EN_PART_ISTL_search.html | Partner search services - use searching keyword "signal" |
| · http://www.cordis.lu/ist/particip.htm | How to apply |