SIGNAL
Bulletin mensuel des microsystèmes
Microsystems Monthly Newsletter
RESMIQ
Regroupement Stratégique en Microsystèmes du Québec

FROM THE EXECUTIVE COMMITTEE

We are pleased to present the events and news that took place during March in this third issue of the SIGNAL monthly newsletter. Looking at our activities of international scope, the organization of the 10th annual international conference IEEE NEWCAS is progressing and we can already announce a successful event. The deadline for paper submission expired on March 1 and it is with great pride that we note that the call for papers has attracted more than 300 scientific contributions from around the world including Canada, France, China, the United States and the Middle East as well. This is another breakthrough compared to all other editions since the launch of the conference back in 2003. These contributions are currently being evaluated by the Scientific Committee whose result will be announced on April 20, and enabling the organization committee to finalize the official program before the end of April. The keynote speakers have already confirmed their participation and a brief overview of their presentations is posted on the website of the conference at newcas2012.org. We take this opportunity to congratulate and thank the organizing committee members whose hard work permitted to achieve an unprecedented level of quality. As for our annual scientific poster contest for graduate students organized for the 3rd year, it attracted a record number of proposals. The selected proposals will be presented at our annual conference as part of the 80th ACFAS conference to be held in Montreal on May 7. Finally, the celebration of 25th anniversary of the foundation of our center will be highlighted at the NEWCAS2012 conference banquet on June 19. We invite you to visit our website for various activities, seminars, intensive courses and competitions for the upcoming months.

Best regards,
M. Sawan, director

RESMIQ'S ACTIVITIES

Financial support for undergraduate students competition
SUBMISSION DEALINE - April 5th, 2012.
More details

Intensive course
COMSOL Multiphysics 2 days intensive training, 24 & 25 April, 2012, École Polytechnique de Montréal.
More details

ReSMiQ seminars jointly with IEEE CAS & SSCS
- Algorithm-Architecture Co-Design for DSP Application, by Dr. Pramod Kumar Meher, April 5, 2012.
- Towards Green Circuits and Systems, by Dr. Magdy Bayoumi, April 13, 2012.

NEWS FROM OUR MEMBERS

EXPOSURE

Dr. Sawan from Polytechnique is a member of the IEEE Biomedical Engineering Award International committee

INVOLVEMENT

Dr. Gross from McGill is program Co-Chair of the IEEE SiPS 2012, to be held from October 17 - 19, 2012 in Québec City, Canada.
More details

ACHIEVEMENT

Dr. Granger from ETS and his collaborators from the University of Cagliary (Italy) received a grant from the MDEIE (Québec's government) for the project of *Adaptive classification system for video-based face recognition*.

Dr. Domingue of UQTR received the *UQTR Chair on RF microsystems for hydrogen detection* for a duration of 5 years. More details

Message to members: we will be pleased to publish your news in forthcoming issues, let us know.

ReSMiQ annual symposium
Microsystems and networking : A necessary mix
May 7, 2012, Montréal, Canada
More details

NEWCAS 2012
10th IEEE International NEWCAS Conference
June 17 - 20, 2012, Montréal, Canada
www.newcas2012.org

SPOTLIGHT ON OTHER CONFERENCES

12th International Forum on Embedded MPSoC and Multicore (MPSoC'12), July 9 - 13, 2012, Québec, Canada.
More details

55th IEEE International Midwest Symposium on Circuits and Systems (MWSCAS 2012), August 5 - 8, 2012, Boise, Idaho, USA. More details

XXX IEEE International Conference on Computer Design (ICCD 2012), September 30 - October 3, 2012, Montréal, Canada. More details

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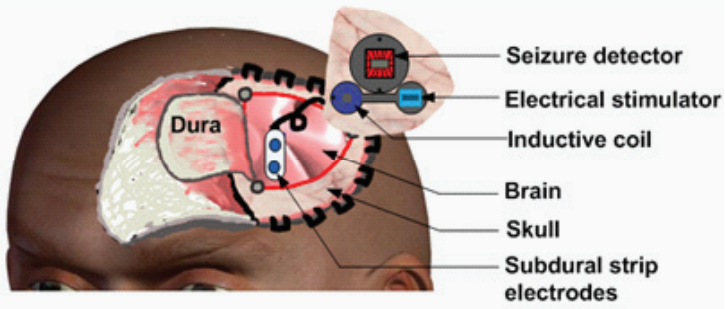
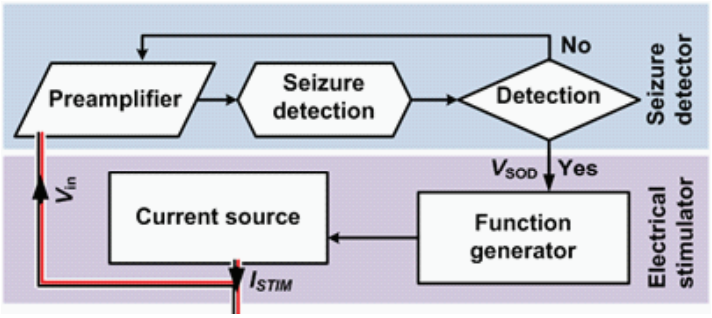
RESEARCH CONTRIBUTIONS

Some of the research achievements of our members.
This month, three major contributions are presented.

1. Muhammad T. Salam, Fayçal Mounaïm,; Dang K.Nguyen, **Mohamad Sawan**, Low-Power Circuit Techniques for Epileptic Seizures Detection and Subsequent Neurostimulation, Journal of Low Power Electronics, Volume 8, Number 2, April 2012 , pp. 133-145(13) (Cove Page Article)

In this paper, authors present low-power circuit techniques for implementing a closed-loop neurostimulator (CLNS) as an alternative treatment for medically refractory epilepsy. The proposed circuit has low-power dissipation with better detection sensitivity compared to the recently proposed circuit techniques for epileptic seizure detector. Authors demonstrate low-power circuit techniques for implementation of an implantable CLNS, individual functional testing, and validation of the seizure detector on real intracerebral EEG (icEEG) recordings and testing of self-triggering electrical stimulation. The CLNS comprises a low-power icEEG acquisition front-end, epileptic seizure detector, and a widely programmable current stimulator(see figure below).





2. R. Yadav, A. K. Shah, J. A. Loeb, **M. N. S. Swamy**, R. Agarwal Morphology-based Automatic Seizure Detector for Intracerebral EEG Recordings IEEE Transactions on Biomedical Engineering, Biomedical Engineering, 2012 (online).

In this paper, a new seizure detection system aimed at assisting in a rapid review of prolonged intracerebral EEG recordings is described. It is based on quantifying the sharpness of the waveform, one of the most important electrographic EEG features utilized by experts for an accurate and reliable identification of a seizure. The waveform morphology is characterized by a measure of sharpness as defined by the slope of the half-waves. The new system detected a wide range of seizure patterns that included rhythmic and nonrhythmic seizures of varying length, including those missed by the experts. We also compare the proposed system to a popular commercial system.

3. Hossein Mahvash Mohammadi, Ebrahim Ghafar-Zadeh, and **Mohamad Sawan**, An Image Processing Approach for Blind Mobility Facilitated Through Visual Intracortical Stimulation, Artificial Organs 2012 (online).

This article presents an image processing approach dedicated for a blind mobility aid facilitated through visual intracortical electrical stimulation. The method examines a display framework based on the distances related to a scene. The distances of objects to the walker are measured using a size perspective method which uses only one camera without any occlusion effect. The method extracts the information of the closest object to the camera and transfers a sense of distance to a blind walker. The proposed image processing method can estimate the distances of objects within 7.5 mof the walker, and alert the presence of the closest object to the person. This new method offers the advantages of information reduction and scene understanding suitable for visual prosthesis.

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