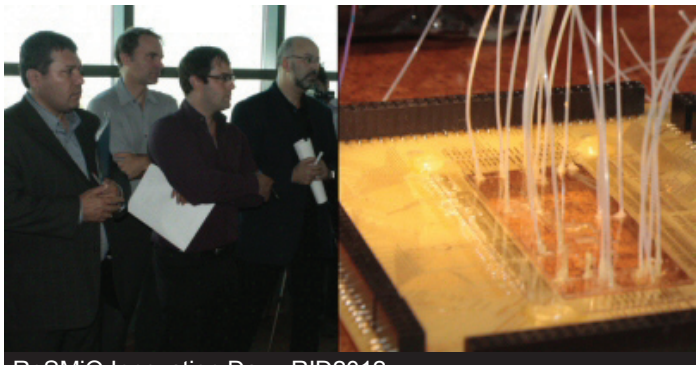
SIGNAL
Bulletin mensuel des microsystèmes
Microsystems Monthly Newsletter
RESMIQ
Regroupement Stratégique en Microsystèmes du Québec

FROM THE EXECUTIVE COMMITTEE

It is with pleasure that we present a new edition of SIGNAL introducing the news and events for the month of September. Two major events attracted our attention. First of all the 2012 edition of ReSMiQ Innovation Day ReSMiQ (RID2012) held for the first time on September 20 at the École Polytechnique. This new activity organized by our center aims to give visibility to the research work of Québec's students in the field of microsystems. Undergraduate and graduate students demonstrated their scientific and technical expertise during a competition via an experimental demonstration in front of a jury of experts. The best three projects in each category were awarded a prize. For this 1st edition, we featured 11 projects. We would like to thank all the students who have submitted their project and congratulate the winners. We hope to see many more new innovations in upcoming editions. The other major news for this month is the partnership agreement between our center and the firm Cadre Codesign Inc. The objective of the agreement is to optimize and further develop business relationships between ReSMiQ and the industry. ReSMiQ and Cadre Codesign have already collaborated in various project developments and this agreement is a natural evolution of an ongoing relationship. The concept of offering industry the best of the universities research and development expertise is a vision shared by both. This agreement will enable us to develop and new approach and create a new spirit of cooperation between Quebec's universities and the industry, it will further enhance technological project developments between both entities," said Pierre Popovic, Codesign's President and CEO.

Best regards,
M. Sawan, director



ReSMiQ Innovation Day - RID2012

RESMIQ'S ACTIVITIES

Financial Support competition for graduate students.
APPLICATION DEADLINE – October 15, 2012.
Eligibility and Application

NEWS FROM OUR MEMBERS

EXPOSURE

Dr. Domingue from UQTR started a collaboration with the CEA-Leti for the development of microsystems applied to gaz detection.
More details

Dr. Sawan from Polytechnique offered an invited talk at Polytech Nice Sophia, France.

INVOLVEMENT

Dr. Gross from McGill is the Technical program co-chair for the IEEE Workshop on Signal Processing Systems (SiPS2012).
More details

ACHIEVEMENT

Dr. Massicotte from UQTR received a grant to develop a tool for categorizing patients with chronic low back pain.

Dr. Peter from Polytechnique and Dr. Fréchette from U. de Sherbrooke are launching an infrared imager in partnership withTeledyne DALSA and C2MI.

IEEE-NEWCAS2013
International conference
June 16 - 19, 2013, Paris, France
Call for papers

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

SPOTLIGHT ON OTHER CONFERENCES

IEEE Workshop on Signal Processing Systems (SiPS 2012), Oct. 17 - 19, 2012, Québec City, Canada.
More details

IEEE Biomedical Circuits and System Conference (BIOCAS 2012), November 28 - 30, 2012, Hsinchu, Taiwan.
More details

2012 International Conference on Electronics, Circuits and Systems (ICECS), December 9 - 12, 2012, Sevile, Spain.
More details

24th International Conference on Microelectronics (ICM2012), December 17 - 20, 2012, Algiers, Algeria.
More details

The **SIGNAL** newsletter is published by ReSMiQ. For information please contact the management team : 514-340-4711 ext. 3612, email : marie-yannick.laplante@polymtl.ca
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RESEARCH CONTRIBUTIONS

Special issue on RID 2012.

Here are some of the projects presented at the ReSMiQ Innovation Day.

Sami Hached, **M. Sawan**, Sphincter Artificiel commandé et alimenté en énergie sans fil, JIR 2012, Première place, Projets de 2ième et 3ième cycle.

The implantation of an artificial urinary sphincter (AUS) is nowadays the gold standard treatment for severe cases of stress urinary incontinence. The functioning of this internal implant is purely hydro-mechanical. Even though it has recovered the continence of many men during the 40 past years, its principle based on manual operating mode requires some dexterity and limits the control of the implant, resulting in cases of revision surgery. In this study we present a novel concept of the AUS offering the possibility to remotely control the sphincter rapidly and without mechanical effort. The implant's embedded software can also be updated remotely. The design is compatible with already implanted AUS which allows the suppression of the manual pump reducing the incisions and making the implantation easier for men and women. The device has been tested in vitro; the results are exposed and discussed (Fig. 1).

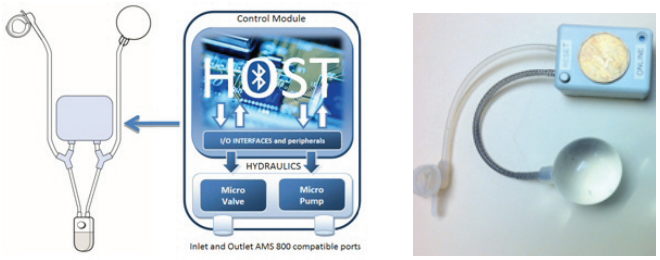

Fig. 1. The artificial sphincter design and its internal modules

Grzegorz Gut, **S. Abdi**, Scribble: An electronic solution to taking notes ECE, JIR 2012, Première place, Projets de 1ième cycle.

We introduce a novel device, called Scribble, for adding notes, drawings and annotations on documents using a simple stylus. Scribble uses a 10.4 inch multi-touch resistive screen with a resolution of 1024X1024 points. The hardware controller for the screen detects any touches (either by stylus or the user's palm) and sends raw "touch" co-ordinates to a single-board computer using a USB connection. The key modules of the software on the computer are the USB reader, palm detector, controller and renderer. The USB reader reads data from the USB port, converts it into points and area coordinates, and passes this information to the palm detection module, which analyses the series of consecutive data points to distinguish between the palm and the stylus touches. All the points that are determined to be part of the palm are disregarded while the remaining points are passed to the controller. Depending on the mode of operation (write or erase) the controller makes the corresponding modifications to the document and sends the new bitmap to the renderer to display on the screen. As such, Scribble enables users to write comfortably with a stylus, while resting their palm on the screen, similar to writing on paper.

Laureates of the first RID

Undergraduate Projects

1st place: G. Gut et al, University of Concordia, Scribble: An electronic solution to taking notes.
2nd place: J. Bouchard et al, Système de navigation automatisé pour véhicules aériens sans pilote, Université de Sherbrooke.
2nd place: W. Lemaire et al, Système d'imagerie numérique haute résolution pour véhicules aériens autonomes, Université de Sherbrooke.
3rd place: G. Seguin-Godin et al, Sonde de calibration temporelle des scanners TEP,Université de Sherbrooke.

Graduate Projects

1st place: S. Hached et al, École Polytechnique de Montréal, Sphincter Artificiel commandé et alimenté en énergie sans fil.
2nd place: Z. Yushan et al, École Polytechnique de Montréal, A portable Lab-on-Chip platform for magnetic beads manipulation and detection.
3rd place: F. Lefèvre et al, Université du Québec à Montréal, Puce miniature pour détecter la pollution de l'eau.

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