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WIMS² Newsletter

March 2016

WIMS² Wireless Integrated MicroSensing & Systems

Partnering With Industry in Microsystems Research

Achievement Award for Research in N/MEMS

Prof. Mina Rais-Zadeh received the 2015 IEEE Early Career Sensors Council Technical Achievement Award, "For pioneering research in sensors technology: adaptable nano/micro-electromechanical systems (N/MEMS)."

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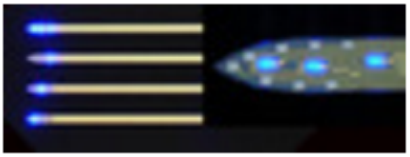
Somin Eunice Lee Receives CAREER Award

WIMS² News & Events

U-M Leading Neurotechnology 'Dream Team' for Brain Research and Education



A "dream team" of experts in sensors, electronics, data analysis and neuroscience has been awarded a $5 million grant to help unravel the mysteries of the brain and cross-train an international group of neuroscientists and engineers. The project is directed by Prof. Euisik Yoon, and includes experts and partner institutions around the world.

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Prof. Anthony Grbic Elected IEEE Fellow for Contributions to the Theory and Design of Electromagnetic Metamaterials

Prof. Tony Grbic has been elected IEEE Fellow, "for contributions to the theory and design of electromagnetic metamaterials." Tony has created radically new antennas and optical devices based on the development of novel metamaterials and metasurfaces. His research could pave the way for flat/low profile, integrated optical devices, as well as new generations of wireless consumer electronics and mobile devices that are either smaller or more versatile.

Prof. Somin Eunice Lee, assistant professor of Electrical and Computer Engineering, was awarded an NSF CAREER award for her research project, “Engineering Plasmonic Nanoantenna Architectures for Efficient Nuclear Delivery.”

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Cutting the Cost of Hearing

Dr. Angelique Johnson, founder of the startup company, MEMStim, aims to drastically reduce the cost of cochlear implants.

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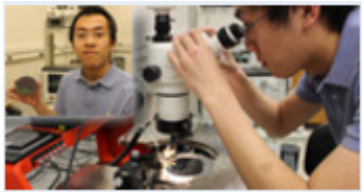
Student Profile – Muzhi Wang



Muzhi Wang, an undergraduate student in electrical engineering, found his calling in the research lab. He got there by discovering and then actively pursuing his primary interests. Muzhi transferred to Michigan from Shanghai Jiaotong University, China, his junior year. When he got here he took a variety of courses in different areas, including circuits, electromagnetics, and systems.

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A Fully Electronic Microfabricated Gas Chromatograph with Complementary Capacitive Detectors for Indoor Pollutants

Research being conducted by WIMS2 faculty and scientists headlines the latest issue of Microsystems & Nanoengineering, the new open access journal published by the Nature Publishing Group. This paper reports a complete micro gas chromatography (μGC) system in which all the components are lithographically microfabricated and electronically interfaced.

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A Fabrication Process for the Monolithic Integration of Magnetoelastic Actuators and Silicon Sensors

Scott Green, Jun Tang, and Prof. Yogesh Gianchandani's paper on, "A Fabrication Process for the Monolithic Integration of Magnetoelastic Actuators and Silicon Sensors," has been selected as one of the 2015 Highlights of Journal of Micromechanics and Microengineering.

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IEEE MEMS 2016

WIMS² faculty presented the following four papers at the 29th IEEE International Conference on Micro Electro Mechanical Systems, held in Shanghai on January 24 - 28, 2016:

E.E. Aktakka and K. Najafi, “A Six-Axis Micro Platform for In Situ Calibration of MEMS Inertial Sensors,” IEEE International Conference on Micro Electro Mechanical Systems (MEMS 2016), Shanghai, China, January 2016

A. Ansari and M. Rais-Zadeh, “Frequency-Tunable Current-Assisted AlGaN/GaN Acoustic Resonators,” IEEE

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Attention WIMS² Alumni

Please submit your recent awards and honors to lynettmc@umich.edu, so we can include them in
future WIMS² News Announcements.

International Conference on Micro Electro Mechanical Systems (MEMS 2016), Shanghai, China, January 2016

M. Jafari and M. Rais-Zadeh, “A 1550 NM Phase Change Electro-Optical Shutter Array,” IEEE International Conference on Micro Electro Mechanical Systems (MEMS 2016), Shanghai, China, January 2016

Z. Zhang, Y-C. Chen, Y. Luan and E. Yoon, "High-Throughput Biomimetic 3D Gel-Island Chip for Investigating Cancer Cell Heterogeneity,” IEEE International Conference on Micro Electro Mechanical Systems (MEMS 2016), Shanghai, China, January 2016

Search Conference Papers

ISSCC 2016 - International Solid-State Circuits Conference

WIMS² faculty presented the following ten papers at the 2016 IEEE international Solid-State Circuits Conference (ISSCC), held in San Francisco on January 31 - February 4, 2016:

T. Jang, M. Choi, S. Jeong, S. Bang, D. Sylvester, D. Blaauw, "A 4.7nW 13.8ppm/°C Self-Biased Wakeup Timer Using a Switched-Resistor Scheme," IEEE international Solid-State Circuits Conference (ISSCC), San Francisco, California, January 2016

W. Jung, J. Gu, P. D. Myers, M. Shim, S. Jeong, K. Yang, M. Choi, Z. Foo, S. Bang, S. Oh, D. Sylvester, D. Blaauw, "A 60%-Efficiency 20nW-500μW Tri-Output Fully Integrated Power Management Unit with Environmental Adaptation and Load-Proportional Biasing for IoT Systems," IEEE international Solid-State Circuits Conference (ISSCC), San Francisco, California, January 2016

Y. Zhang, M. Khayatzadeh, K. Yang, M. Saligane, N. Pinckney, M. Alioto, D. Blaauw, D. Sylvester, "iRazor: 3-Transistor Current-Based Error Detection and Correction in an ARM Cortex-R4 Processor," IEEE international Solid-State Circuits Conference (ISSCC), San Francisco, California, January 2016

W. Jung, D. Sylvester, D. Blaauw, "A Rational-Conversion-Ratio Switched-Capacitor DC-DC Converter Using Negative-Output Feedback," IEEE international Solid-State Circuits

Conference (ISSCC), San Francisco, California, January 2016

M. Khayatzadeh, M. Saligane, J. Wang, M. Alioto, D. Blaauw, D. Sylvester, "A Reconfigurable Dual-Port Memory with Error Detection and Correction in 28nm FDSOI," IEEE international Solid-State Circuits Conference (ISSCC), San Francisco, California, January 2016

I. Lee, W. Lim, A. Teran, J. Phillips, D. Sylvester, D. Blaauw, "A 78%-Efficient Light Harvester over 100-to-100klux with Reconfigurable PV-Cell Network and MPPT Circuit," IEEE international Solid-State Circuits Conference (ISSCC), San Francisco, California, January 2016

M. Choi, T. Jang, J. Jeong, S. Jeong, D. Blaauw, D. Sylvester, "A Current-Mode Wireless Power Receiver with Optimal Resonant Cycle Tracking for Implantable Systems," IEEE international Solid-State Circuits Conference (ISSCC), San Francisco, California, January 2016

Y. Shi, M. Choi, Z. Li, G. Kim, Z. Foo, H-S. Kim, D. Wentzloff, D. Blaauw, "A 10mm3 Syringe-Implantable Near-Field Radio System on Glass Substrate," IEEE international Solid-State Circuits Conference (ISSCC), San Francisco, California, January 2016

N. E. Roberts, K. Craig, A. Shrivastava, S. N. Wooters, Y. Shakhsheer, B. H. Calhoun, D. D. Wentzloff, "A 236nW -56.5dBm-Sensitivity Bluetooth Low-Energy Wakeup Receiver with Energy Harvesting in 65nm CMOS," IEEE international Solid-State Circuits Conference (ISSCC), San Francisco, California, January 2016

K. D. Choo, J. Bell, M. P. Flynn, "Area-Efficient 1GS/s 6b SAR ADC with Charge-Injection-Cell-Based DAC," IEEE international Solid-State Circuits Conference (ISSCC), San Francisco, California, January 2016

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