

HYUN JUNG

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Department of Electrical and Computer Engineering
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EDUCATION

Ph. D. in Electrical and Computer Engineering

University of Maryland, College Park, MD, USA

Advisor: Dr. Reza Ghodssi

Expected June 2016

M. S. in Electrical Engineering

Korea Advanced Institute of Science and Technology (KAIST), Daejeon, South Korea

Thesis Title: Streaming TPEG Contents in the MPEG-4 System over DMB Network

Advisor: Dr. Munchurl Kim

02/2005

B. S. in Electrical and Computer Engineering

Handong Global University, Pohang, South Korea

02/2003

RESEARCH EXPERIENCE

University of Maryland – Department of Electrical and Computer Engineering

Graduate Research Assistant – MEMS Sensors and Actuators Laboratory (MSAL) 01/2012 – present

- Developing a MEMS sensing platform for *in-situ*, real-time monitoring of mechanical and chemical structure changes in lithium-ion battery electrodes. Specific accomplishments include:
 - *Fabrication of opto-mechanical sensor for monitoring of both mechanical and chemical structure changes in lithium-ion battery electrodes*
 - *Demonstration of in-situ, real-time monitoring of mechanical and chemical structure evolutions in V_2O_5 electrode during battery operation*

KAIST – Department of Electrical Engineering

Graduate Research Assistant – Laboratory for Multimedia Computing, Communications and

Broadcasting Laboratory (MCCB)

03/2003 – 02/2005

- Extended Digital Media Broadcasting (DMB) service in existing framework by incorporating Transport Protocol Expert Group data into DMB contents without sending any auxiliary data in the separate channel.

PROFESSIONAL EXPERIENCE

Telecommunications and Technology Association, South Korea – Software Quality Evaluation Center

Research Engineer

08/2007 – 11/2011

- In charge of evaluating commercial software for Good Software certification and Bench Mark Test

DAEWOO ELECTRONICS CROP, South Korea – Research Engineer

Research Engineer

03/2005 – 07/2007

- Created Electronic Program Guide by demultiplexing Program and System Information Protocol information from Transport Stream
- Implementation of High Definition Transport Stream player

- Analyzing Advanced Common Application Protocol (ACAP) and troubleshooting ACAP Middleware

TEACHING EXPERIENCE

University of Maryland – Department of Electrical and Computer Engineering

- Teaching assistant for one undergraduate-level course, *Digital Logic Design (ENEE244)*, University of Maryland 01/2012 – 05/2012

PUBLICATIONS

Journal Papers (published):

1. E. Pomerantseva, **H. Jung**, M. Gnerlich, S. Baron, K. Gerasopoulos, and R. Ghodssi, "A MEMS platform for in situ, real-time monitoring of electrochemically induced mechanical changes in lithium-ion battery electrodes," *Journal of Micromechanics and Microengineering*, vol. 23, 2013.

Conference Papers and Presentations (Presenter underlined):

[S]: short abstract, [L]: long abstract, [P]: full paper

1. H. Jung, K. Gerasopoulos, M. Gnerlich, A. Talin, and R. Ghodssi, "In-situ, Real-time Monitoring of Mechanical and Chemical Structure Changes in a V₂O₅ Battery Electrode using a MEMS Optical Sensor," *proceedings of the 2014 Solid-State Sensor, Actuator, and Microsystems Workshop (Hilton Head 14')*, Hilton Head SC, June 8-12, 2014 [P].
2. H. Jung, M. Gnerlich, K. Gerasopoulos, and R. Ghodssi, "Real-time MEMS monitoring of mechanical changes in V₂O₅ battery electrodes during electrochemical cycling," *Late news of the 13th International Conference on Micro and Nanotechnology for Power Generation and Energy Conversion Applications (PowerMEMS 13')*, London, UK, December 3-6, 2013 [S].
3. H. Jung, E. Pomerantseva, M. Gnerlich, S. Baron, K. Gerasopoulos, and R. Ghodssi, "Novel Method for In situ Mechanical Characterization of Lithium-ion Battery Electrodes Using MEMS Platform," *MRS Spring Meeting*, San Francisco, CA, April 1-5, 2013 [S].
4. S. Baron, E. Pomerantseva, M. Gnerlich, K. Gerasopoulos, H. Jung, and R. Ghodssi, "A platform for in situ, Real-time Measurement of Electrochemical Reaction-induced Stress/strain in Lithium-ion Battery Electrodes," *Proceedings of the 12th International Conference on Micro and Nanotechnology for Power Generation and Energy Conversion Applications (PowerMEMS 12')*, pp. 199-202, Atlanta, GA, December 2-5, 2012 [P].
5. H. Jung, K. A. Cha, J. Y. Lim and M. Kim, "Streaming TPEG Contents in MPEG-4 systems over DMB network," *Proceedings of IS&T/SPIE 17th Annual Symposium on Electronic Imaging Science and Technology*, San Jose, CA, January 16-20, 2005 [P].
6. H. Jeong, H. Tan, Q. Shahab, J. Y. Lim and M. Kim, "Pervasive Multimedia via an Intelligent Remocon for Digital home Environments," *Proceedings of the International Conference on Pervasive Computing and Communications (PCC 04')*, Las Vegas, NV, June 21-24, 2004 [P].

Workshop and Symposia (Presenter Underlined):

1. H. Jung, M. Gnerlich, K. Gerasopoulos and R. Ghodssi, "In-situ MEMS Monitoring of Mechanical Changes in a V₂O₅ Battery Electrode During Electrochemical Cycling," *Mid-Atlantic Micro/Nano Alliance Spring Symposium, (MEMS Alliance 14')*, Baltimore, MD, March 10, 2014.
2. H. Jung, E. Pomerantseva, M. Gnerlich, and R. Ghodssi, "In situ Mechanical Characterization of Silicon Thin Film Electrode in Lithium-ion Battery using Fabry-Perot Interferometer," *Mid-Atlantic Micro/Nano Alliance Spring Symposium, Gaithersburg (MEMS Alliance 13')*, Gaithersburg, MD, May 14, 2013.

EXPERIMENTAL TECHNIQUES

Characterization

- Profilometry, Raman spectroscopy

Processing

- Photolithography, Sputtering deposition, Plasma-enhanced chemical vapor deposition, Reactive-ion etching, Deep reactive-ion etching, Chip dicing, Wet etching, Atomic layer deposition

COMPUTER LITERACY

Operating System

- Windows, Unix, Linux

Scientific

- Mathematica, Origin, MATLAB, AutoCAD, COMSOL

Programming

- C/C++, Visual C++, Visual Basic, Java

REFERENCES

Dr. Reza Ghodssi (advisor)

Herbert Rabin Distinguished Professor of Electrical and Computer Engineering

Director, Institute for Systems Research

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