Machine Learning 을 이용한 음성인식 시스템

유봉근

I2R, A*STAR

음성인식은 Gaussian Mixture Model(GMM)-Hidden Markov Model(HMM) 기반으로 2010 년 초반까지 연구되어 왔으나, Deep Neural Network(DNN) 연구와 병렬 처리가 가능한 Graphics Processing Unit(GPU)의 개발로 2010 년 초반부터 거의 모든 음성인식 시스템은 DNN, Recurrent Neural Network(RNN)을 사용하고 있습니다. 이 세미나는 Machine Learning, Deep Learning 에 대하여 그리고 Machine Learning 을 이용한 음성인식 시스템에 대하여 발표합니다.

Biography

유봉근은 현재 Institute for Infocomm Research(I2R), ASTAR 에서 Senior Researcher III 로 재직중입니다. 그는 I2R, ASTAR 에서 근무하기 전에 Rosetta Stone, ACLC, L&H 등 싱가폴, 미국, 한국회사에서 근무했었으며, 음성인식 분야에서 20 여년동안 연구소 및 산업체에서 일하고 있습니다. 그의 관심분야는 음성인식과 머신러닝 입니다.

Electrochemical energy systems from a mechanical perspective

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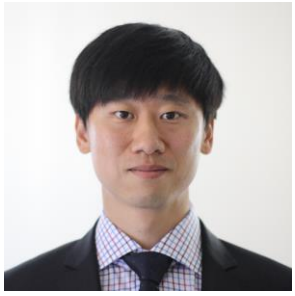
Electrochemistry is a quite extraneous topic for mechanical engineers. Indeed, electrochemistry is working as important principle in various field and demanding the contribution mechanical perspective. Since global issue of energy has brought rapid growth of electrochemical systems for energy storage and conversion (e.g. batteries and energy harvesting), these systems require the consideration of many kinds of mechanical perspectives such as solid mechanics for structure design, thermal management for the safety, and thermodynamics for better efficiency.

In this talk, I will discuss how mechanical engineering can contribute to the electrochemical systems for energy storage and conversion. In the first part of the talk, the fracture behavior of crystalline Si nanostructures during electrochemical lithiation will be presented, and the influence of volume expansion and stress on pillar fracture will be discussed. In-situ TEM studies will show how the mechanical interaction of silicon nanopillar structures during lithiation can affect volume expansion and fracture behavior when the pillars are placed in confined media, which is representative of electrode materials in actual (close-packed) battery cell configurations. In the second part of the talk, the electrochemical thermodynamic cycle for thermal energy harvesting will be introduced. By utilizing novel electrode materials, this system can achieve very high efficiencies at low temperature ranges.

Biography



Seok Woo Lee is an assistant professor in the School of Electrical and Electronic Engineering, Nanyang Technological University. He received his B.S. in mechanical engineering from Pohang University of Science and Technology (POSTECH) in 2003 and his Ph.D. in mechanical engineering from Korea Advanced Institute of Science and Technology (KAIST) in 2008. Then, he worked as a postdoctoral scholar and a research associate in Stanford University for about 6 years. His research interests are in electrochemical systems for energy storage and conversion.