

Zongchang Liu

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Highlights:

- Deep knowledge in PHM analytics and rich experience of implementing PHM tools and algorithms in industrial projects. Vast knowledge in battery health assessment, prognostics, modeling, and performance prediction, especially for EV battery applications.
- A self-motivated, passionate, responsible, and innovative student with excellent teamwork skills, critical thinking skills, and problem solving skills, that always brings changes to his community in positive manners.

EDUCATION

2012-Present	University of Cincinnati- Cincinnati, US PhD in Mechanical Engineering (expected 2017). Research Assistant in Center for Intelligent Maintenance System. Advisor: Prof. Jay Lee
2010-2012	University of Michigan- Ann Arbor, US B.S. in Mechanical Engineering, Overall GPA: 3.8/4.0, Major GPA: 3.94/4.00 Minor in Multidisciplinary Design for Global Healthcare
2008-2012	Shanghai Jiao Tong University UM- SJTU Joint Institute- Shanghai, China B.S. in Electrical Engineering, Overall GPA: 3.27/4.0, Core GPA: 3.40/4.00

CURRENT RESEARCH EXPERIENCE at IMS Center

Jan.2013-Present	Precision Machinery Research & Development Institute <ul style="list-style-type: none">• Designed and built up a LabView user interface for CNC machine condition monitoring for users to track the present and historical operation status, usage of energy and carbon footprint.• Published the front panel of user interface as a webpage and integrated to IMS Cloud website.
Jan.2013-Present	Alstom Track Tracer <ul style="list-style-type: none">• With data collected from add-on vibration and acoustic sensors on bogies and car body, used kurtosis and root mean square value of acceleration signals to detect the spots of irregularities on rails• On the inspected spot, used time-frequency spectrum to validate

irregularities detection and diagnosis the failure mode.

Oct.2012-Present **HIWIN Corporation**

- Health monitoring and precision degradation estimate for ball screw system based on signals from controller and add-on vibration sensors.
- Extracted features from raw data, used logistic regression to calculate the confidence value, and mapped the confidence value to precision degradation using neural network.

Sept.

2012-Present

Battery Prognostics and Virtual Battery Platform

- Accumulated deep knowledge in battery test instrumentation, test method, battery modeling, and parameter estimation.
- Leading the development of Virtual Battery Platform for mobility, health, and safety management for Electrical Vehicles. Developed mechanical model and user driving behavior identification model to accurately estimate the battery power consumption for EV.

PREVIOUS EXPERIENCE

May-Aug. 2012

Design of Multi-use Fiber System of Endovenous Laser Treatment for Chronic Venous Insufficiency, SJTU. Shanghai
Advisor: Prof. Huan Qi, Sponsored by Covidien Ltd.

Sept. 2011-
Apr. 2012

Design of Time-efficient Laparoscopic Gallbladder Removal Device, U.M. Ann Arbor
Advisor: Prof. Kathleen Sienko, Sponsored by Covidien Ltd.

Sept.2011-
Apr.2012

Operations Research on Observation Medicine in Emergency Department, U.M. Ann Arbor
Advisor: Prof. Amy Cohn. Sponsored by University of Michigan Hospital

Apr.- Aug. 2010

Noise Detection and Reduction for Diesel Engines, SJTU. Shanghai
Advisor: Prof. Chengliang Liu

WORK EXPERIENCE

Aug.2012-
Present

Graduate Researcher, NSF I/UCRC for Intelligent Maintenance System (IMS)

- Conduct work on IMS Center battery research initiatives and other assigned projects.
- Dec. 2012-
Jan.2013 **Internship in Advanced Industrial Technology Research Institute (AITRI) at Shanghai Jiaotong University**
- Battery test bed set up and experiment design; Road test with instrumented EV.
- Apr.- Aug. 2011 **Internship in Covidien Ltd, Demand Identification and Market Analysis of Minimally Invasive Surgeries in China**
- Conducted clinical observations in 11 hospitals though 6 provinces in China. Identified 110 need statements for improvements in current MIS-medical devices through direct observations and interactions with surgeons.

HONORS AND AWARDS

- Shanghai Outstanding Graduates of 2012, June 2012.
- Student representative speaker, UM-SJTU Joint Institute Graduation Ceremony for Class of 2012.
- Distinguished Leadership Award (Top 2%), UM-SJTU Joint Institute, 2009-2010
- Distinguished Student Leader (Top 1%), Shanghai Jiao Tong University, 2009
- Yunxia Scholarship for outstanding social services (Top 1%), Shanghai Jiao Tong University, 2009-2010

PATENTS

- Serial No. s 61/679036 entitled "LAPAROSCOPIC GALLBLADDER EXTRACTION DEVICE" filed on August 2, 2012
- Radial Direction Laser Emission System for Endovenous Laser Treatment (under process)

COMPUTER SKILLS

Microsoft Office Suite, MATLAB, SIMULINK, LabVIEW, DIAdem, SolidWorks, ADAMS, Hypermesh, SimaPro, C++, C, Mathematica, Dreamweaver, HTML Script.