

# Resume: Jia CAI

## Education

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### Aug. 2012 – Current:

**PHD, Missouri University of Science and Technology**, Rolla, MO, USA

**Research focus:** diagnostics and prognostics for the system, including fault detection, fault isolation and remaining useful life schemes.

### Sep. 2010 – Jun. 2012:

**M.S., Zhejiang University (ZJU)**, Hangzhou, China

**Major:** Measuring Technology and Automatic Devices, Department of Control Science and Engineering

**GPA:** 3.87/4.00 (Rank 1/36), **Major GPA:** 3.90 (ZJU standard algorithm)

### Sep. 2006 – Jun. 2010:

**B.S., Northeastern University (NEU)**, Shenyang, China

**Major:** Automation, College of Information Science & Engineering

**GPA:** 3.82/4.00 (Rank 3/285), **Major GPA:** 3.94 (ZJU standard algorithm)

## Awards and Honors

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- **Outstanding Cadre of ZJU**, 2011
- ✓ **Excellent Graduate of NEU**, 2010
- ✓ **China National Scholarship**, 2009
- ✓ **Outstanding Student of NEU**, twice, 2008 & 2009
- ✓ **NEU Scholarship**, 6 times, 2006 – 2010
- ◇ **Freescale Cup Smart Car Contest**, First Prize of Northeastern Area, 2010
- ◇ **NEU Football Robotic Contest**, First Prize, 2009

## Project/Internship Experience

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### ✚ **Application of passive RFID tag for prognosis of degradation of composite material (May. 2013– Current)**

In this project, we use the degradation model together with the UV exposure and humidity measured by RFID tag to detect the degradation level of composite material. The system can evaluate and predict the condition of the composite material health under test.

### ✚ **Development of real-time diagnostics and prognostics toolbox in LabVIEW (Dec. 2012 – Current)**

This program belongs to smart embedded diagnostics technologies in LabVIEW, the objective is to develop a real-time diagnostics and prognostics toolset in LabVIEW using Model-Based fault detection scheme. A systematic method has been developed to select the appropriate model-based FD/FI/RUL schemes and a toolbox demo in LabVIEW.

### ✚ **Research of thermal error compensation for advanced machining tools (Nov. 2011 – Jun. 2012)**

This project, which is related to the topic of my MS' thesis, uses the origin translation method to realize real-time compensation for the thermal error of running machine tools. First, a prediction model is built using the least square linear regression technique. Then a thermal error compensating controller is designed which meets the requirements of accuracy, reliability and real-time response. The controller can compensate for the thermal error of high-grade CNC (Computerized Numerical Control) machines, with the result of reducing the contour error by more than 70%. Based on this project, I have a paper recorded by China's 23<sup>rd</sup> Progress Control Conference.

### ✚ **Internship in United-Imaging Medical Equipment Company (Jun. 2011 – Oct. 2011)**

During the 3 months in this company, my job is to write a user interface program using C++ for the embedded medical devices such as an X-ray telescope. The devices can communicate with each other through this program, which is based on the TCP/IP protocol.

### ✚ **Freescale Cup Smart Car Contest (Mar. 2010 – Jul. 2010)**

The smart car uses 13 sensors to detect the track on the ground. I'm the leader of my group. So I had done a lot of work including designing the position and arrangement of the infrared sensor, writing a stable program with speed-control algorithm and setting the related parameters. The car won the first prize of the Northeastern Area.

### ✚ **Internship in Rockwell Automation Lab, Shenyang (May. 2009 – Jun. 2009)**

In May 2009, I got the opportunity to study and work in the Rockwell Automation Lab. In the lab, I learned principles of transducers and program of PLC. At last, I finished a task of designing a self-adapted blower. By adjusting the speed of the blower, we can keep the ball in the predetermined position; even there are some interference factors, like wind from outside, changes in the weight of the ball, etc.

**🚦 NEU Football Robot Contest (Sep. 2008 – Jan. 2009)**

This is the first time that I put my electrical knowledge into practice. In this contest, I'm in charge of the football goalkeeper robot. It uses 4 infrared sensors to detect the football. Then according to the track, it can make the right decision: move forward, back, left or right. The design is not difficult, but through it I get interested in control algorithm and sensor utilization.

**Skills**

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**Languages:** C/C++, ASM, Java**Software:** MATLAB, Visual Studio, Altium Designer, IAR Embedded Workbench, LabVIEW**MCU Application:** ARM7, ARM9, MSP430X, DSP, FPGA**Embedded Operating Systems:** Linux, WinCE