Weipu ZHAO

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RESEARCH EXPERIENCE

Nov.2012-Apr.2013 | Pipeline Fault Detect Algorithm Design, *Master's Thesis*

To find a novel scheme to detect and locate the small leak occurred in oil pipeline. Improve the accuracy of leak detection and location. In charge of this project cooperated with *PetroChina Pipeline R&D Center*. Develop a novel algorithm to detect the abrupt change of pressure signal, extract specific features to distinguish leak signals from normal signals. Use BP neural network to classify the type of the pipeline pressure signals. Design modified dynamic programming algorithm to calculate the estimated change time of a pressure signal. The detecting and positioning accuracy of traditional leak locate method was improved through the algorithm I designed.

KEY WORDS: Digital signal processing, feature extraction, artificial neural network, MATLAB, LABVIEW;

Dec.2012-Mar.2013 | Research on the Determination of Metal Corrosion Types,

Co-worked project aimed to detect the metal corrosion types using electrochemical noise. BP artificial neural network and support vector machine as two kinds of machine learning methods was utilized to classify three typical metal corrosion types. Ten representative features of electrochemical noise were extracted as the feature vector. Mainly responsible for the design of classifier. Use a 300-size data set contains 100 samples of each type to design and test the BP and SVM classifier. The classification performance of BP and SVM was compared.

KEY WORDS: Pattern Recognition, BP neural network, Support vector machine, MATLAB;

Feb.2012-Nov.2012 | Leak Monitor System Based on RTU,

Establish a Leak Monitor System use Remote Terminal Unit(RTU) and NI data acquisition (DAQ) board. Pipe pressure data need be measured in the upstream and downstream transport station and send to the center server in order to detect leak events. Normally industrial PC and PCI-DAQ board was used. Choose ADAM PC-based Programmable Controller as RTU to replace computer due to the space and power restrains under some harsh environment. Write C codes to program the RTU to measure and send field data to center server via TCP/IP ethernet communication. Define data transmit protocols to pack and unpack pressure signals. Design Labview programs in the center to receive and save the data.

KEY WORDS: Data communication, TCP/IP, RTU, Data acquisition, C, LABVIEW;

Dec 2010-Jul 2011 | Design of an Automatic underwater Smart Sensor, *Bachelor's Thesis*

Design of an *"Automatic Underwater Ball"* which could detect the parameters (pressure, temperature, etc.) of liquid environment with corresponding sensors. Responsible for the design of embedded systems software and interface circuits, e.g.: close-loop control system design, test of suitable solutions of controlling system, motor control circuits design.

KEY WORDS: Embedded system design, C coding, PID control, circuits design;

Jul 2009-Dec 2009 | Design of an Automatic Trailing Robot

Design and manufacture a robot capable of trailing as well as identifying and carrying objects automatically. Prepared an overall plan, designed and manufacture the system, monitored the schedule.

PAPERS

Co-author	Determination of Corrosion Types from Electrochemical Noise by Artificial Neural Networks.
	Int. J. Electrochem. Sci, 2013, 8: 2365-2377. Science Citation Index
First Author	Method for Pipe Leak Detection and Location based on Model Change Detection.
	World Sci-tech R & D(in Chinese) Accepted

Work Experience

FEB 2014-CURRENT	**Software Engineer Intern**, *BaianTek Co. LTD., Shanghai,China*
	Responsible for the development and optimization of several engineering software used in the Distributed Fiber Optical Sensers. Such as: Re-develop the PC control software of Mini-EDFA under Labview environment; Adding specialized Spectrum analyze module in the existing Fiber Distributed Temperature sensing system(DTS) software monitoring software under VC environment;
	Another main project was the research of the signal processing and classification techniques of the Fiber Distributed vibration sensing system(DVS).
FEB 2013-SEPT 2013	**Assistant Software Engineer**, *Pipeline R&D Center, Langfang, Hebei, China*
	Work at the Mechanical Automation Institute of PetroChina pipeline R&D center. Mainly responsible development and implement of the pipeline leak detection software system. In charge of one project which was cooperated by my lab and this company that design novel algorithms to detect weak pipeline leak signals. During the final stage of this project I went to this company as an intern to integrate and implement the algorithms I designed to their systems under both Labview and C# environments. Wrote weekly reports to update the work progress. Completed the software development documents including bug fix log and test report. Under my coordination, this project (worth 400K CNY) passed the final examination hold by the sponsor PetroChina and was completed on time.

Education

SEP 2014- NOW	Master of Science, **Simon Fraser University**, Vancouver, Canada
	Major: Computer Science in BigData
	Course: Machine Learning, Data Mining, Natural Language Processing
	GPA: 3.3/4.0	Major Courses
SEP 2011- JAN 2014	Master of Science, **Tianjin University**, Tianjin, China
	Major: Instrument Science and Technology
	State Key Lab of *Precision Testing Technology and Instruments*
Thesis:	*The study of oil pipeline weak leak detection and location based on pressure and flow signals*
	GPA: 3.3/4.0	Major Courses
SEP 2007- JUL 2011	Bachelor of Engineering, **Tianjin University**, Tianjin, China
	Major: Measure and Control Technology and Instrument
	GPA: 3.3/4.0	Major Courses

Awards

SEPT 2011- JULY 2013	National Graduate Scholarship Second Prize (Top 10%)
MAY 2011	The 12th National Undergraduate academic contest*"Challenge Cup"*
	SPECIAL PRIZE(Top 5%)	Link
SEP 2008- SEP 2011	Annual merit Student of Tianjin University(Top 10%)
DEC 2009	Tianjin University Robot Competition First Prize (Top 10%)

Computer Skills

Basic Knowledge:	PHP, MYSQL, Drupal, HTML, LINUX, ARM, LaTeX
Intermediate Knowledge:	MATLAB, LABVIEW, C++/C, Excel, Word, PowerPoint