Jinyu Xie, Ph.D.

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Summary

- 5+ years domain knowledge in **Fault Diagnosis and Prognostics, Machine Learning, Time Series Analysis, Signal Processing, and Control Systems** across academia research and industrial applications.
- 5+ years of experience in **Matlab/Simulink**, 2 years of experience in **Python**, working knowledge in **C/C++**.
- Exposure to professional software development cycle (API design, version control, peer code review, unit test)
- R&D Experience across **Biomedical, Oil & Gas, Software Industries**.

Work Experience

Design Optimization & Identification Group, MathWorks Inc. — Natick, MA
Software Engineer - Predictive Maintenance Toolbox — *April 2017 - Present*

- Explore and develop Feature Extraction and Selection algorithms for Predictive Maintenance purpose
- Develop tools to perform Spectrum Analysis on vibration signal to detect and isolate faults
- Apply Machine Learning algorithms for fault classification
- Design Graphical User Interface (GUI) for Predictive Maintenance workflows

Information & Controls Lab, Pennsylvania State University — University Park, PA
Research Assistant - Glucose Monitoring & Control Algorithm Development — *Aug 2012 – May 2017*

- Designed system identification experiments to collect informative clinical data (35 Patients, 3-day-scenario).
- Identified a nonlinear data-driven model for blood glucose metabolic systems that significantly improved the long-term glucose prediction by adding bilinear features with physiological insights.
- Developed a personalized dietary and exercise recommender system to enhance diabetic patients' self management and minimize the clinical risk.
- Proposed an innovative algorithm (Variable State Dimension Algorithm) to detect and estimate unexpected maneuver (meals/exercise) with a sensitivity of 96% and false alarm rate of 8%.
- Synthesized an Adaptive Model Predictive Control Algorithm to estimate model parameters online and deliver personalized optimal insulin therapy (outperformed a PID controller by 40% in terms of risk indices).

Process Data Technology Group, Air Products Inc. — Allentown, PA
PhD Intern - Predictive Modeling and Supply Chain Optimization — *Sep 2016 - Dec 2016*

- Identified hydrogen refinery models (Box-Jenkins Models, 17 inputs, 36 outputs) with closed-loop data.
- Delivered APIs for sequential design of experiment (adaptive D-Optimal) and supply chain optimization (mixed integer programming, optimization surface estimation).

Process Automation Control & Optimization Group, Shell Oil Company — Houston, TX
PhD Intern - Signal Processing & Fault Detection — *May 2015 – Aug 2015*

- Delivered an enhanced pipeline leak detection system ready for commission and deployment.
- Analyzed large scale of plant data (2 million records) and identified fault signatures and root causes.
- Built data-driven models to estimate pipeline flow rates under limited instrumentation with error rate $< 5\%$.
- Raised the system uptime from 60% to 100% with false alarm rate less than 1% by applying advanced signal processing algorithms (model-based fault detection methodologies).
- Sped up the system deployment and replication procedure by modifying the system structures and eliminating redundant codes (Visual Basic).

Education

Pennsylvania State University, University Park, PA — GPA 3.91/4.00
Ph.D. Mechanical Engineering (Major), Computational Science (Minor) — *Aug 2012 – May 2017*
M.S. Mechanical Engineering — *Aug 2012 – May 2016*

Ph.D. Thesis: Intelligent Artificial Pancreas Incorporated with Maneuver Detection and Recommender System for Type-1 Diabetes Self Management

Tsinghua University, Beijing, China — GPA 3.70/4.00
B.S. Mechanical Engineering — *Aug 2008 – July 2012*

Skills

Matlab/Simulink, Python, C/C++, Version Control (Git), Linux/Unix Shell, Machine Learning, Time Series Analysis, Signal Processing, Control Systems