

Bin Huang

3634 Brookstone Drive, APT D, Cincinnati, OH, 45209
(513)-807-6922, huangba@mail.uc.edu

HIGHLIGHT

A **self-motivated, passionate, responsible, and innovative** student with **current study** in data-driven Prognostics and Health Management (PHM) methodology, prognostics and diagnosis using signal processing, machine learning algorithms and Bayesian analysis, and **other diverse experience and knowledge** of computational fluid dynamics (CFD), biomedical material, design methodology (system and product), pollution control (atmosphere and water) and plant physiology, hemodynamics and vascular biomechanics.

EDUCATION

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| University of Cincinnati | 08/2016~now |
| Ph.D. candidate in Mechanical Engineering | |
| • Research Assistant at NSF I/UCRC for Intelligent Maintenance System. | |
| State University of New York at Buffalo | 08/2013~05/2016 |
| M.S. in Mechanical Engineering | |
| Harbin Institute of Technology, China | 08/2009~07/2013 |
| B.E. in Thermal and Power Engineering | |

CURRENT RESEARCH EXPERIENCE IN IMS

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| Review of Data-driven Prognostics and Health Management Techniques | 11/2016~now |
| • Summarized and benchmarked the wining methods for the PHM Data Challenge competitions in the past. | |
| • Provided a generalized PHM methodology to facilitate algorithm selection and problem-solving strategy in different scenarios. | |
| Review of Cyber-physical System | 07/2016~08/2016 |
| • Reviewed the milestones in the development history of CPS. | |
| • Summarized and discussed the key ideas, enabling techniques, and their corresponding challenges. | |
| • Studied CPS techniques and industrial cases in terms of different application fields. | |
| Virtual Metrology for Chemical Mechanical Planarization | 07/2016~10/2016 |
| PHM'16 Data Challenge | |
| • Implemented and benchmarked the performance of 1) Feature Selection: PCA and k-Nearest Neighbor; 2) Regression: Linear Regression, RBF Neural Network, Support Vector Regression, Self-Organizing Map for Regression; 3) Time Series Analysis: Linear Interpolation. | |
| • Achieved a competitive result with an acceptable error of MSE=8.3. | |

PREVIOUS RESEARCH EXPERIENCE

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| Thesis of Predicting the Fate of Downwind Bio-aerosols using Numerical Simulation | 10//2014~05/2016 |
| • Developed a stochastic Lagrangian air dispersion model in Matlab for predicting the particle movements in wind fields created by the high-resolution hourly-updated meteorological data - RTMA. | |
| • Offered an alternative and additional explanation to environmental trigger of asthma and pointed out the potential impact area. | |
| Project of Total Temporomandibular Joint Implant | 02//2014~05/2016 |
| • Support TMJ design in 3D modeling, FEA analysis and minimizing the cost. | |
| • Aided in financial report as purchasing manager. | |



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- Project of **Water Surface Spilling Oil Recovering Device Project** 03/2011~08/2011
- Improved the efficiency of spilling oil collection based on current existing oil collectors, by applying three innovative techniques, feasibility study and thermal analysis with ANSYS Fluent.
 - Built a prototype machine based on the 3D design in Solidworks.
- Research on **Physiology Property of Yellow Vein Phenotype Yv1** 11/2007~05//2008
- Isolated the gene from an Arabidopsis mutant with the yellow vein phenotype using the map-based cloning approach and polymerase chain reaction (PCR).
 - Named the identified gene MGT10 which encodes an Mg²⁺ transporter localized in the thylakoid.

PATENTS

CN102383409 (B) Water surface oil recovering device 05/2011

HONOR & AWARDS

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- Second Prize** in the Forth National College Students' Contest on Energy Conservation and Pollution Emissions Reduction 08/2011
- Honorable Mention** in Consortium for Mathematics and Its Applications Mathematical Contest in Modeling 02/2012
- First Prize** in National TRIZ Innovative Design Contest 11/2012

SKILLS

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- Programming: MATLAB, Python, R, C++, LabVIEW
 - Data Analytics: Machine learning, Signal processing, Data mining, Bayesian Analysis
 - Others: Computational Fluid Dynamics, Thermal & Fluid Dynamics

LANGUAGE

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- Chinese: Native
 - English: Proficient
 - Japanese: Elementary