

Seminar Series

**Enhancing the Ability of Ensemble Empirical
Mode Decomposition in Machine Fault
Diagnosis**

by

Ms GUO Wei

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Date: Feb. 5, 2010 (Friday)

Time: 4:30pm- 5:20pm

Venue: LT-7, 4/F, Academic Building

ABSTRACT

Empirical Mode Decomposition (EMD) is an adaptive time-frequency analysis method that has been widely employing for machinery fault diagnosis. EMD is famous in revealing instantaneous change of frequency or time from non-linear sensory signal so that the occurrence of anomalous signal can be accurately detected. However, its shortcomings include mode mixing and end effects that often appear in its decomposed bands. These problems decrease the accuracy, particularly in vibration-based fault diagnosis. Recently, many researchers have proposed various improved methods, which include the famous Ensemble EMD (EEMD), to solve the problem of mode mixing. Its purpose is to introduce controlled amount of white noise to the original EMD. After adding known white noise into the raw signal, the signal in the band will have a uniformly distributed reference scale which forces the EEMD to exhaust all possible solutions in the sifting process for minimizing mode mixing effect. Even though EEMD becomes popular, the proper settings for the number of ensemble and the amplitude of white noise that should be added are still not formally prescribed. In this presentation, I will discuss the influence of parameters setting on the results of reducing mode mixing problem and then apply EEMD in machine fault diagnosis.

BIOGRAPHY

GUO Wei received her BSc degree in Automation from Taiyuan University of Technology (2002) and MSc degree in Control theory and control engineering from Dalian University of Technology (2005). Currently, she is a PhD candidate in the Department of Manufacturing Engineering and Engineering Management, City University of Hong Kong, where she works with Dr. Peter W. TSE. Her research interests include fault diagnosis and data compression.

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All are welcome!

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