

Requests for Collaboration

Name: Tadao Kawai Current position: Professor E-mail address: kawai@mech.eng.osaka-cu.ac.jp	
Research Interests	
<ul style="list-style-type: none">● Diagnosis of mechanical system and infrastructure● Parameter identification● Cyber-Physical system for diagnosis	
Creative Achievements in The Application of New and Existing Science and Technology	
<p>(1) Although condition monitoring and diagnosis technique are very important, especially in a management of a factories and an maintenance of an infrastructure like a bridge and so on, we have a small number of communities concerning to these topics in Japan. I and my research group lead this research area for a long time. Recent key words are IoT, Industry 4.0 and digital twin.</p> <p>(2) I developed many techniques to measure and estimate the condition of a machine and an infrastructure. Sensing technologies, i.e., image processing, vibration measurement and so on, data processing, clustering are key technologies of my research. My targets are mechanical systems, i.e., a machine tool, a engine, a beam and so on, and infrastructures, i.e., a bridge and so on.</p> <p>(3) Digital twin becomes one of the most important concepts in diagnosis technology. At first, a computer model of a target system is built. Then a simulation is carried out concurrently with an operation of a target system. If a condition of a system changes, feedback from a target system to a computer model modifies parameters within a computer model to output same result as a target system. By estimating modified parameters and their time history, we can estimate machine condition and remaining life of a system. Now I am implementing the digital twin technique to an existing machine.</p>	
Technology (Product, Process, Device, Service etc.) That I Want to Request for Collaboration	
<ul style="list-style-type: none">● Measurement and estimation of condition of a system for diagnosis and maintenance● Development of cyber-physical system for prediction of condition or remaining life of a system● Estimation of a damage of infrastructures	
A List of 5 Key Publications	
<ul style="list-style-type: none">• Tatsuro Ishibashi and <u>Tadao Kawai</u>, “Modelling of Oil Film Bearings”, Proceeding of 2nd Japanese Modelica Conference, 2018. doi:10.3384/ecp18148115.• Tatsuro Ishibashi, Atsushi Yoshida and <u>Tadao Kawai</u>, “Modelling of Asymmetric Rotor and Cracked Shaft”, Proceeding of 2nd Japanese Modelica Conference, 2018. doi:10.3384/ecp18148180.• Tatsuro Ishibashi, Han Bing and <u>Tadao Kawai</u>, “ Rotating Machinery Library for Diagnosis”, Proceeding of the 12th International Modelica Conference, 2017. doi:10.3384/ecp17132381.• Masataka Ishizawa, <u>Tadao Kawai</u>, Masahide Matsumura, Takashi Yamaguchi, Toshiyuki Kobayashi and Takao Kawahira, “Study on Scour Evaluation Method of Pier Based on Vibration Mode”, The 13th International Workshop on Advanced Smart Materials and Smart Structures Technology, July 22-23, 2017, The University of Tokyo, Japan• <u>Tadao Kawai</u>, Masakazu Nonaka, “Cutting Condition Monitoring in Milling Operation with Micro End mill”, The 8th International Conference on Leading Edge Manufacturing in 21st Century, October 18 - 22, 2015, Kyoto Research Park, Kyoto, Japan.	