

# Infrastructure Inspection and Information Management with AI and UAS Technologies

Ben M. Chen  
Department of Mechanical and Automation Engineering  
The Chinese University of Hong Kong  
Shatin, N.T.  
Hong Kong, China

## Abstract

In this talk, we aim to present a fully autonomous and fully functional infrastructure inspection and information management system with advanced AI and multiple unmanned aerial systems (UAS) technologies. The system includes sophisticated unmanned aerial hardware platforms and software systems for automatic flight control, task and motion planning, artificial intelligent algorithms and software platform for image and infrared data processing, i.e., crack, spalling, delamination and other defect detections, and building information modeling (BIM) and management system integrated with detailed geographical information systems (GIS) and digital twin (DT) technologies. Compared with the manual inspection, the system that we have developed has the advantages of being more economical, safer, flexible and efficient. It can also be adopted for other industrial applications, including smart traffic management and smart cities.

## About the speaker...



Ben M. Chen is currently a Professor of Mechanical and Automation Engineering at the Chinese University of Hong Kong (CUHK). Before joining CUHK in 2018, he was a Provost's Chair Professor in the Department of Electrical and Computer Engineering at the National University of Singapore, where had worked for 25 years. He was an Assistant Professor in the Department of Electrical Engineering at the State University of New York at Stony Brook, USA, in 1992–1993, and was a Software Engineer at South China Computer Corporation, China, 1983–1986. His current research interests are in unmanned systems and their applications.

Professor Chen is an IEEE Fellow and Fellow of Academy of Engineering, Singapore. He has authored/co-authored hundreds of journal and conference articles, and ten research monographs in control theory and applications, unmanned systems and financial market modeling. He has served on the editorial boards of a dozen international journals including *Automatica* and *IEEE Transactions on Automatic Control*. He is currently serving as an Editor-in-Chief of *Unmanned Systems* and an Editor of *International Journal of Robust and Nonlinear Control*.