

# **Current Status of Research on Bio-inspired Sensing and Bio-Inspired Actuation Technologies in Korea**

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## **Abstract**

The current status of research and development in bio-inspired sensing and bio-inspired actuation technologies in Korea, which has become more active in recent years, is reported. First, a few recent milestones in this multi-disciplinary engineering field are briefly addressed (e.g., an addition of the new bio engineering division to the Korean Society of Mechanical Engineers (KSME) in November 2007 and the US-Korea Workshop on Bio-Inspired Sensor Technology and Infra-Structure Monitoring held in Jeju, Korea, May 23-25, 2008 under the sponsorship of the US National Science Foundation and the Korea Science and Engineering Foundation). Especially, through this bi-lateral workshop, many researchers in the field of civil engineering in Korea recognized the value and potential of bio-inspired technologies in civil infrastructure systems. Next, a few cutting-edge researches on bio-inspired sensing and actuation technologies, which are being conducted by Korean scholars, are introduced (e.g., the biologically inspired artificial compound eyes, which may provide significant impact in miniaturizing imaging systems requiring wide field-of-view or fast motion detection and is also useful for wide angle illumination, and the effective bio-inspired actuation systems, which are based on LIPCA (lightweight piezo-composite curved actuator), PUMPS (piezoelectric unimorph with mechanically pre-stressed substrate) and EAPap (electro-active paper)). Also, a few recently proposed ideas for civil engineering applications by fusing bio-inspired concepts with structural health monitoring (SHM) or structural control systems for large-scale infrastructures are presented.

## **Bibliography**

Dr. Hyung-Jo Jung is an Assistant Professor of Civil and Environmental Engineering at KAIST (Korea Advanced Institute of Science and Technology) since 2007. He worked on the faculty at Sejong University in Seoul, Korea for 4 years before joining KAIST. Dr. Jung received his Ph.D. in Civil Engineering from KAIST in 1999. His main research areas are structural control based on smart materials such as MR fluids/elastomers, structural health monitoring using smart sensors and energy harvesting from ambient vibration or aerodynamic instability.