

## Development of Cloud-based Bridge Long-term Monitoring System

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### ABSTRACT

For structural health monitoring of a bridge, developing a digital SOC system for preemptive maintenance in response to the rapid deterioration is a demanding issue. Despite the development of IoT sensor networks, most maintenance procedures are still conducted as short-term evaluations through static and dynamic load tests due to limitations in long-term monitoring and data processing. In this study, an IoT smart sensor capable of high-fidelity sensing and ultra-low power operation was developed for long-term monitoring of a bridge. A cloud-based data management and processing system was also developed to evaluate the displacement and neutral axis in real time using data transmitted to the cloud database through low-power LTE-M. The developed sensor and cloud computing system were validated through indoor and field experiments.

### REFERENCES

Park, J. W., Sim, S. H., & Jung, H. J. (2013). Displacement estimation using multimetric data fusion. *IEEE/ASME Transactions On Mechatronics*, 18(6), 1675-1682.

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