

S.H. LEE, M.S. KANG, D.S. SHIN, C.S. HAN. **Estimation with applications to dynamic status of an excavator without renovation.** *Gerontechnology* 2012; 11(2):414; doi:10.4017/gt.2012.11.02.417.00

Purpose Operators and drivers are easily exposed to danger by excavators is operating in dangerous places such as slopes, soft ground, building dismantling sites, distressed areas, and construction waste land-fills. For the safe use of conventional excavators as a tele-operated system without any renovation, feedback information of the boom, arm, and bucket cylinder should be estimated as a schematic of the excavator arms with the same of joint angles, respectively. There is a strong need for acquiring this information using the proposed sensor system and converting algorithm enabling each joint angle to be derive for a commercial excavator without any renovation and remodeling. **Method** This study provides kinematic and dynamic information of the excavator¹⁻². The proposed sensing module, which derives joint angles set by IMU-sensors, is implemented in the excavator. Acquired and estimated data from the sensing module³ and true known value was compared through prototype demonstration⁴⁻⁵. **Results & Discussion** Detachable sensor modules and robotic manipulators were installed in an excavator; a field test verified the feasibility of implementing the proposed estimation method (*Figure 1*).

References

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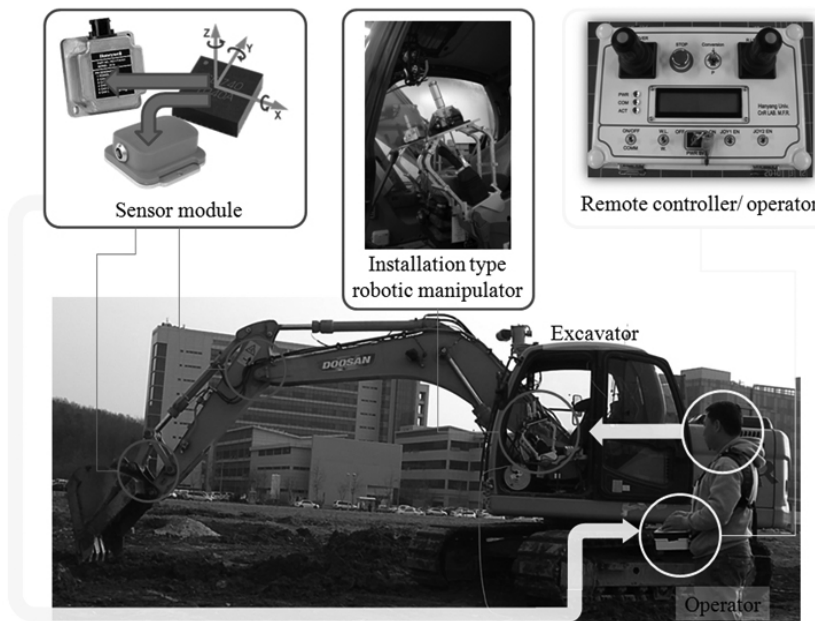


Figure 1. Installation type (detachable) tele-operated excavator without renovation and remodeling