건설현장 인간-로봇 협업을 위한 사용자 중심 상호작용 디자인

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The construction industry is currently witnessing a transformative period with the escalating deployment of robots on construction sites. Driven by the persistent quest for efficiency, safety, and precision, robots have progressively become indispensable assets in tasks ranging from bricklaying to complex infrastructure assembly. As robots transition from controlled environments into dynamic construction sites, the need for seamless human-robot interfaces becomes paramount. However, developing such an interface poses distinct challenges. Unlike conventional manufacturing settings, construction sites are large-scale, with unstructured environmental factors, constantly evolving tasks, and diverse human operators. Therefore, designing an interface that can accommodate such variability while maintaining intuitiveness and precision presents unique challenges. Furthermore, in designing human-centered interfaces that consider a worker's usability, expertise, and individual characteristics, a formidable challenge remains in nurturing trust and ensuring safe interactions between humans and robots. This presentation will introduce the recent works at Prof. Ahn's Lab that focus on the human-centered user interface designs for robot operation in construction that enhance collaboration and interactivity and future opportunities for integrating advanced AI algorithms and extended reality tools.