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Augmented Reality for Telesurgery using STAR

Augmented reality surgical telementoring system utilizes computer vision to track and align mentor annotations with the surgical region, keeping trainees focused and reducing errors.

Problem Addressed:

Optimal surgery and trauma treatment requires a multitude of surgical skills that are frequently unavailable in rural hospitals and field locations. Currently, telementoring is used to provide this missing expertise to such locations; however, these systems require the trainee to focus on a telestrator, fail to illustrate upcoming surgical steps, and give the mentor an incomplete picture of the ongoing surgery. Therefore, there is an unmet need for technology to facilitate these complex telementoring processes.

Researchers at Purdue University have developed a novel approach to surgical telementoring using an augmented reality (AR) simulated transparent display. The system allows a mentor to add annotations to be displayed for a mentee during surgery. The annotations are displayed on a tablet held between the mentee and the surgical site as a heads-up display. As it moves, the system uses computer vision algorithms to track and align the annotations with the surgical region. Among other applications, this system allows trainees to remain focused on the surgical region and reduces the potential for errors during surgery.

Advantages:

-Utilizes augmented reality to enhance the sense of copresence

-Computer vision algorithms track and align the annotations with the surgical region

-Allow trainees to remain focused on the surgical region

Potential Applications:

-Telementoring

Technology ID

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Category

Artificial Intelligence & Machine Learning/Computer Vision & Image Recognition

Education & EdTech/Immersive & XR Learning Environments

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View online

-Telesurgery

-Distance learning

TRL: 5

Intellectual Property:

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