

# **Radiotransparent audio-visual system to avoid pediatric patient anesthesia during radiation therapy and imaging.**

Stanford inventors have created an audio-visual system with a radiotransparent screen provides a means for communication and visual distractions during procedures such as radiation therapy and radiation imaging.

Patient immobilization, crucial for accurate irradiation targeting, can be extremely challenging for pediatric patients. Although irradiation does not cause immediate symptoms or pain, children placed in an unfamiliar and isolated setting for an extended amount of time may feel anxious and find remaining still difficult. To ensure that the procedure is not traumatizing nor prolonged, pediatric patients are often anesthetized. Some patients who need multiple consecutive sessions may even be anesthetized daily, putting them at risk of brain damage and subjecting them to overnight fasting, invasive procedures, and increased treatment cost and time.

The proposed audio-visual assisted therapeutic ambiance system can significantly reduce the pediatric patient's anxiety and need for anesthesia during radiation procedures. This system includes a wireless projector, a speaker, a mount, and a radiotransparent plastic projection screen. The screen can be placed between the patient and the radiation equipment without interfering with the procedure. The patient can be sedated while watching pre-selected videos and communicating with the providers on the system, reducing the need for anesthesia.

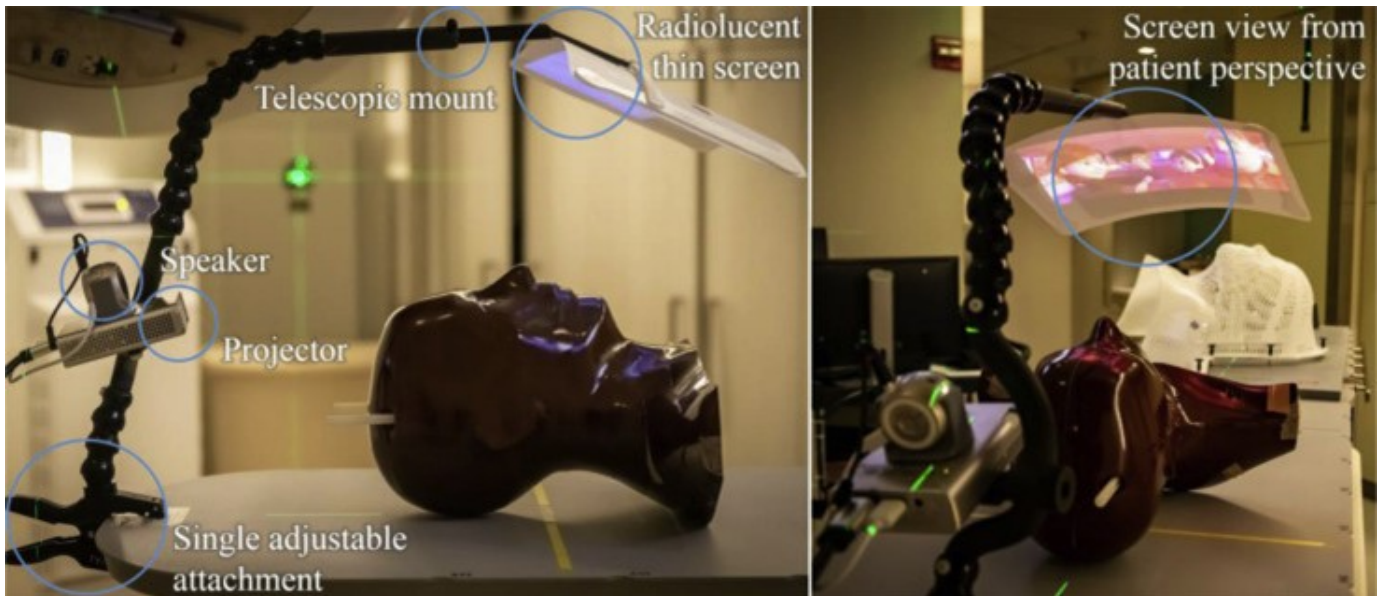


Figure Caption: Audio-visual assisted therapeutic ambiance in radiotherapy system (Figure 1 from Balazy et al., 2020).

## Applications

- Radiation therapy (radiotherapy) for cancer treatment
- Radiation imaging (radiography)
- X-ray imaging
- Computed tomography (CT)

## Advantages

- Reduces procedure time and complications.
- Reduces need for, and cost related to, anesthesia.
- Improves quality of life of patients.

## Publications

- Hiniker, S. M., Bush, K., et al. (2017). ["Initial clinical outcomes of audiovisual-assisted therapeutic ambience in radiation therapy \(AVATAR\)"](#). Practical Radiation Oncology, 7(5), 311-318.

- McClelland, S., 3rd, Overton, K. W., et al. (2020). "[Cost Analysis of Audiovisual-Assisted Therapeutic Ambience in Radiation Therapy \(AVATAR\)-Aided Omission of Anesthesia in Radiation for Pediatric Malignancies](#)". Practical Radiation Oncology, 10(2), e91–e94.
- Balazy, K. E., Gutkin, P. M., et al. (2020). "[Impact of Audiovisual-Assisted Therapeutic Ambience in Radiation Therapy \(AVATAR\) on Anesthesia Use, Payer Charges, and Treatment Time in Pediatric Patients](#)". Practical Radiation Oncology, 10(4), e272–e279.
- Gutkin, P. M., Donaldson, S. S., et al. (2020). "[Use of Audiovisual Assisted Therapeutic Ambience in Radiotherapy \(AVATAR\) for Anesthesia Avoidance in a Pediatric Patient with Down Syndrome](#)". Advances in Radiation Oncology, 6(2), 100637.
- Holt, D. E., Hiniker, S. M., et al. (2021). "[Improving the Pediatric Patient Experience During Radiation Therapy-A Children's Oncology Group Study](#)". International Journal of Radiation Oncology, Biology, Physics, 109(2), 505–514.
- Prasad, R. N., Baliga, S., et al. (2022). "[Radiation Therapy Without Anesthesia for a 2-Year-Old Child Using Audio-Visual Assisted Therapeutic Ambience in Radiation Therapy \(AVATAR\)](#)". Practical Radiation Oncology, 12(3), e216–e220.
- Gutkin, P. M., Skinner, L., et al. (2023). "[Feasibility of the Audio-Visual Assisted Therapeutic Ambience in Radiotherapy \(AVATAR\) System for Anesthesia Avoidance in Pediatric Patients: A Multicenter Trial](#)". International Journal of Radiation Oncology, Biology, Physics, 117(1), 96–104.

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