

# Abstract

Musical instruments play a crucial role in artistic expression, allowing musicians to convey emotions and ideas through sound. However, many traditional musical instruments, while beloved, pose significant challenges in terms of portability and space management.

This project introduces an innovative approach to musical performances by integrating smart, adaptable instruments with mobility solutions. The system is designed to cater to both experienced musicians and beginners, offering two distinct modes: a normal playing mode for standard performances and a teaching mode for guided practice. The teaching system is specifically developed to help beginners understand musical notes, improve their skills, and gain confidence before live performances. This enhances the accessibility of music education while ensuring that learners can transition smoothly into professional-level play.

A key feature of the project is its ability to move and adjust its position in accordance with the musician's needs. The system can be controlled to follow a predetermined path, allowing musicians to focus on their performance rather than worrying about the placement or transportation of their instruments. This mobility feature also optimizes space usage, making it ideal for performances in varying venues.

The project consists of three main components:

1. **Invisible Drums** – A revolutionary system that replaces traditional drum sets with a 2-drum stick interface. These sticks are embedded with sensors that detect motion and generate drum sounds electronically, eliminating the need for bulky drum kits while maintaining the authentic drumming experience.
2. **Electronic Harp** – A futuristic instrument that operates without physical strings. Instead, musicians can produce sounds by interacting with laser beams, offering a unique and modern take on the traditional harp. This touchless interface enhances flexibility and allows for innovative sound manipulation.
3. **The Table** – A specialized moving platform designed to carry and position various musical instruments. The table can be programmed to follow specific paths or be manually controlled by the musician, making it an essential tool for optimizing stage arrangements and ensuring seamless transitions between different performance setups.