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INVENTION AND INNOVATION EXHIBITION (I-JaMCSIIIX) 2023

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An IoT-based Instrument for Free Fall Motion

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Abstract— This project presents the development and implementation of an innovative Internet of Things (IoT) instrument designed to investigate the dynamics of objects in free-fall motion. Leveraging the power of Arduino-based hardware and IoT connectivity, the instrument offers a versatile platform for measuring the gravitational acceleration of objects in free fall. The IoT integration empowers observers to remotely operate the instrument. The instrument consists of three key components: a mechanical system, an electrical system, and an IoT system, each playing a pivotal role in its functionality. The mechanical system is composed of a stepper motor with a pulley connected to a rope, a moving pad with a solenoid, an iron pole, and a limit switch, working in tandem to facilitate the instrument's mechanical functions. The instrument has operated and works well.

Keywords— *Arduino, Internet of Things (IoT), Free fall motion, Gravitational acceleration*



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