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John U Free Seminar Series 2020

Physics & Engineering Department

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Welcome to the era of self-tuning drums

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**Abstract:**  
Tuning drums is one of the worst possible things you could ever have to endure as a drummer, it’s a time consuming, arduous process that takes precious time a drummer could be spending practicing, especially when the drummer has to change heads. The question is then, how do we keep the drum tuned and sounding exactly the way we want it to without having to do it ourselves? In this project, a system was developed that can actively search and detect the drum’s frequency and then tune the drum to a designated frequency range set by the user. For a problem of this sort, a hybrid research method was used that included both my own ideas, as well as already existing technology and resources. The proposed system uses the audio processing features with the Simple Audio Frequency Sensor library of an Arduino MKR1000, as well as a microphone chip to be able to detect the sound input. The system also uses a drum and a servo motor that attaches to the drum. The servo and drum system are interfaced with tuning rods for automatically tuning the drum to a drummer specified set of sounds (frequencies). The system was effectively tested using given resources and shown to achieve a range of user specified tuning frequencies. While the product is still very much in its prototyping phase, a patent is actively being applied for and will hopefully be fulfilled by late 2020. The contribution of this product to the field of music could revolutionize the way drums are manufactured for years to come.