**Research Pre-Proposal**

The purpose of this pre-proposal is to help guide you as to whether your idea for your research is do-able or not. There are many things that can cause roadblocks to good research. Some of them include

1. Projects that are too broad
2. Proposals that do not take safety into account (e.g., using carcinogens)
3. Projects that have already been done
4. Projects that are impractical from an equipment perspective
5. Projects that AOS faculty have already informed you are not feasible

Please fill out the top portion of this form and return the entire form to your research teacher by Wednesday 4/25/18.

**Student name: Justin Zhang**

**Subject area of research: Machine Learning**

**The faculty member who helped you the most with this idea: Mr. Writer**

**5 sentence (max) description of what you will be doing:**

**I want to make a deep convolutional generative adversarial network (DCGAN) to synthesize audio of singles notes played on an instrument, which, in this case, is a clarinet; more instruments, combinations, and possibly melodies could be used in the future. The independent variable is the neural network used (a DCGAN), and the dependent variable is the believability of the audio samples generated. The feasibility of using a DCGAN for this task will be compared to that of a variational autoencoder (VAE), which has been successfully tested before in audio synthesis. I will make the algorithm in Python and will record my own audio to use as training data with my own clarinet.**

**Any materials you know you will need, especially ones that are potentially dangerous or expensive: (We know this list will grow in the future.)**

**I personally have all materials I need (software, audio recorder (on phone), computer, clarinet, etc.).**

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**Teacher Evaluation: \_\_\_\_\_\_Doable (with slight modification) \_\_\_\_\_\_Doable with much modification \_\_\_\_\_\_Not doable**

**Teacher with whom student should discuss project next:**

**Teacher Comments:**