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 return the entire form to your research teacher by Wednesday 5/13/2015. Bring a hard copy to class and submit onto turnitin.com by 9:45am.

Student name: Rohan M. Bhansali

Subject area of research: Math modeling

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

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

I will be using multiple deep convolutional neural networks to analyze thoracic roentgenograms and provide a diagnosis for thoracic diseases such as cardiomegaly, pulmonary edema, and pneumonia. Specifically, I plan to train three separate networks based on the differing views provided by anteroposterior (AP), posteroanterior (PA), and lateral radiographs. Initially, a set of networks, dubbed DualNet, that was developed by researchers at the Philips Research Institute, will be replicated. The data that will be employed for the training and evaluation of the networks is the MIMIC-CXR dataset, which contains 371,920 thoracic radiographs with positive and negative labels for twelve different diseases. Subsequently, I plan to integrate patient information, including clinical symptoms and relevant history, to enhance the accuracy of the model's diagnosis and to more closely model the procedure followed by doctors in which X-ray interpretations are "clinically correlated" to align with observed symptoms.

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

Laptop/software to train the model

Teacher Evaluation: _____Doable (with slight modification) _____Doable with much modification _____Not doable

Teacher with whom student should discuss project next:

Teacher Comments: