CS446: Machine Learning	**Spring 2018**
Machine Problem 1	
Handed Out: Jan. 16, 2018	*Due: Jan. 25, 2018 (11:59 AM Central Time)*

Note: The assignment will be autograded. It is important that you do not use additional libraries, or change the provided functions input and output.

Part 1: Setup

- Remote connect to a EWS machine.

```
ssh (netid)@remlnx.ews.illinois.edu
```

- Load python module, this will also load pip and virtualenv

```
module load python/3.4.3
```

- Create a virtualenv "cs446sp_2018".

```
virtualenv --system-site-packages ~/cs446sp_2018
```

- Activate the virtualenv

```
source ~/cs446sp_2018/bin/activate
```

- Update pip

```
pip install --upgrade pip
```

- Checkout and change directory to the course svn repository

```
svn co https://subversion.ews.illinois.edu/svn/sp18-cs446/(netid)
cd (netid)
```

- Copy mp1 into your svn directory, and change directory to mp1.

```
svn cp https://subversion.ews.illinois.edu/svn/sp18-cs446/_shared/mp1 .
cd mp1
```

- Install the requirements through pip.

```
pip install -r requirements.txt
```

Part 2: Exercise

The purpose of this exercise is to introduce you to basic components of Tensorflow, a Python machine learning framework which will be used for the assignments this semester. Specifically, you will need to implement code that creates a few basic computation graphs and then executes them. Before beginning, read through Tensorflow's "Getting Started" tutorial [1]

The following methods must be implemented (more specific details can be found in the corresponding source files):

- In `run_computation.py`, the method `run_computation`, which takes a computation graph node as input, initializes all variables, runs the node, and returns the result.
- In `toy_functions.py`, the methods `toy_fn_1`, `toy_fn_2`, and `toy_fn_3`, which all build computation graphs for different functions.

Part 3: Writing Tests

In `test.py` we have provided basic test-cases. Feel free to write more. To test the code, run the following (which runs `test.py`):

```
nose2
```

Part 4: Submit

Submitting the code is equivalent to committing the code. This can be done with the follow command:

```
svn commit -m "Some meaningful comment here."
```

Lastly, double check on your browser that you can see your code at

```
https://subversion.ews.illinois.edu/svn/sp18-cs446/(netid)/mp1/
```

[1] `https://www.tensorflow.org/get_started/get_started`