



**PY-599 (Fall 2018): Applied Artificial Intelligence
Prior Knowledge and Skills Survey**

Name:

Department:

Program (BS/MS/PhD):

Attention:

This is not an exam, and there is no right or wrong answer. Your answers to this questionnaire will have zero effect on your final grade. Please answer the questionnaire honestly. This will help the instructor to adapt course curriculum to meet your needs.

Your identity and your answers will remain anonymous. Some statistics from the collected data will be shown in the class - but without revealing anyone's identity and answers. So please be honest with your answers.

These surveyed concepts and subjects are not prerequisite for PY-599; instead many of them are curriculum objectives of the course. If you don't know many of them, it is completely fine; you are about to learn them in Applied Artificial Intelligence class!

Questionnaire

Below is a list of concepts in the context of *Artificial Intelligence, Machine Learning, Statistical Learning and Inference*, and other similar fields. If you know the concept, please check the "Yes" box, if you don't please check the "No" box. If your knowledge is very limited, please check the "Somewhat" box. These terms might have been used for other completely different phenomena in other fields. Please don't answer Yes or Somewhat if that is your case.

- Joint Probability Function: Yes No Somewhat
- Conditional Probability: Yes No Somewhat
- Bayes' Theorem: Yes No Somewhat
- Naive Bayes classifier: Yes No Somewhat
- Feature and Feature Extraction: Yes No Somewhat
- Dimension Reduction: Yes No Somewhat
- Curse of Dimensionality: Yes No Somewhat
- Classification: Yes No Somewhat
- Regression: Yes No Somewhat
- Perceptron: Yes No Somewhat
- Multilayer Perceptron: Yes No Somewhat
- Activation function of a neuron: Yes No Somewhat
- Overfitting and Underfitting: Yes No Somewhat
- Regularization in machine learning: Yes No Somewhat
- Generalization in machine learning: Yes No Somewhat
- Dropout in Neural Networks: Yes No Somewhat

- Backpropagation in Neural Networks: Yes No Somewhat
- Gradient Descent Methods for Optimization: Yes No Somewhat
- Stochastic Gradient Descent: Yes No Somewhat
- Momentum in Gradient Descent Techniques: Yes No Somewhat
- Simulated Annealing for Optimization: Yes No Somewhat
- Evolutionary computation: Yes No Somewhat
- Generative models: Yes No Somewhat
- Discriminative models: Yes No Somewhat
- Convolutional Neural Network: Yes No Somewhat
- Pooling in Convolutional Neural Network: Yes No Somewhat
- Transfer Learning: Yes No Somewhat
- Recurrent Neural Network: Yes No Somewhat
- Vanishing and Exploding Gradients: Yes No Somewhat
- Long Short-Term Memory (LSTM) Units: Yes No Somewhat
- Gated Recurrent Units (GRU): Yes No Somewhat
- Generative Adversarial Networks: Yes No Somewhat
- Reinforcement Learning: Yes No Somewhat

Rate your knowledge and skill level in Python Programming on a scale of 0 to 100. Table below gives a description of a *sample* set of ratings. You can use any number between 0 and 100, including 0 and 100.

Rating	Description
100	Well, I am the author of a few fundamental packages for Python!
90	I am an expert Python programmer with many years of professional experience.
75	I am very good at Python, and can earn money by Python programming.
50	Not necessarily an expert in Python, but I manage to finish my projects, and find answer to my questions online or through other resources.
25	I am still learning Python, but there is still a lot left to learn. Sometimes I get stuck in the middle of a project and don't know how to proceed.
10	Once I ran "Hello World!" or another simple Python program.
0	I have had no hands on experience with Python, but have seen one in a zoo!

Your Python rating:-----

You may have very little or no experience with Python, however you might be a very capable programmer with another language (such as C++, Java, MATLAB, etc.). If this is the case, please write the name of the programming language that you are comfortable with, and rate yourself on a scale of 0 to 100 (following the same pattern shown in the table above):