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| Deep Learning Concepts  In order of appearance – **Green Fonts in the PPT** |

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| Reinforcement Learning | An area of [machine learning](https://en.wikipedia.org/wiki/Machine_learning) encouraging software to take [actions](https://en.wikipedia.org/wiki/Action_selection) in an environment so as to maximize some notion of cumulative reward |
| AI | Artificial intelligence, human intelligence exhibited by machines |
| Machine Learning | An approach to achieve artificial intelligence using statistical techniques |
| Deep Learning | A technique for implementing machine learning with hierarchical structures |
| Convolutional Neural Network | CNN or ConvNet; deep, [feed-forward](https://en.wikipedia.org/wiki/Feedforward_neural_network) [artificial neural networks](https://en.wikipedia.org/wiki/Artificial_neural_network) for analyzing visual imagery |
| Hidden Layers | All layers except the input layer and the output layer, made up of a set of neurons |
| Neurons | Analogous to neurons in brain, represent features. Have learnable weights and biases |
| Numpy | A package for scientific computing with Python (good for array) |
| Weights and Biases | The forward path of a neuron is denoted by y=wx+b; w is the weight and b is the bias |
| Forward Propagation | Using the current weights and biases, compute the output and compare it with the real value to get the error |
| Convolutional Layer | Apply a convolution operation to the input, passing the result to the next layer. |
| Max Pooling Layer | Combine the outputs of neuron clusters at one layer into a single neuron in the next layer |
| Fully-connected Layer | Connect every neuron in one layer to every neuron in another layer |
| Backpropagation | Calculate a [gradient](https://en.wikipedia.org/wiki/Gradient) that is needed in the calculation of the [weights](https://en.wikipedia.org/wiki/Artificial_neural_network#Components_of_an_artificial_neural_network) to be used in the network (for updating the weights and biases) |
| Cost Function | Describe our ‘unhappiness’ with the outcome quantitatively (MSE in this project) |
| Activation Function | Defines the output of that node given an input or set of inputs (introduce non-linearity into the system to increase complexity) |
| Weights Initialization | In order to gain appropriate gradient in the first few epochs, Xavier initialization in this project |
| Regularization | Any modiﬁcation we make to a learning algorithm that is intended to reduce its generalization error but not its training error |
| Overfitting | One of the biggest challenges in deep learning; The error on the training set is driven to a very small value, but when new data is presented to the network the error is large |
| Feature Visualization | Visualizing the features learned by a neural network |
| Attribution | Investigating which pixels of the image were responsible for a certain label being picked |