Deep Learning - keras

**No feature engineering required

Ubuntu / Debian - via pip

- sudo apt-get install python-dev python-pip (if you don’t have python installed)
- sudo pip install numpy scipy scikit-learn pillow h5py tensorflow
- sudo pip install keras

Mac Installation - via homebrew & pip

- brew install python (if you don’t have python installed)
- pip install numpy scipy h5py tensorflow
- pip install keras

Windows Installation - via conda (for python >=3.5)

- conda install -conda-forge tensorflow only for python >=3.5
- conda install -conda-forge keras

Windows Installation - via pip (for python >=3.5)

- pip install numpy scipy h5py
- pip install keras

What is Deep Learning?

- Framework for automatic feature learning **

  **** Little / No control over it!**

  **** Difficult interpretation of features which are selected**

- Create end to end optimised frameworks
  - Data -> Manual Feature selection -> random forest -> classification / regression
    - Manual features may be not be optimal, can select better features
  - Data -> deep network -> classification / regression
    - Relevant features **automatically created and selected**

Demo 1 : Feature Visualization

Pro

- Auto selection and creation of features
- End to end framework

Con

- No explicit control over feature selection
- Unintuitive feature / black box features

What is Keras / TF / Theano / MXNet / Caffe / Caffe2 / Torch?

- Libraries to implement deep learning

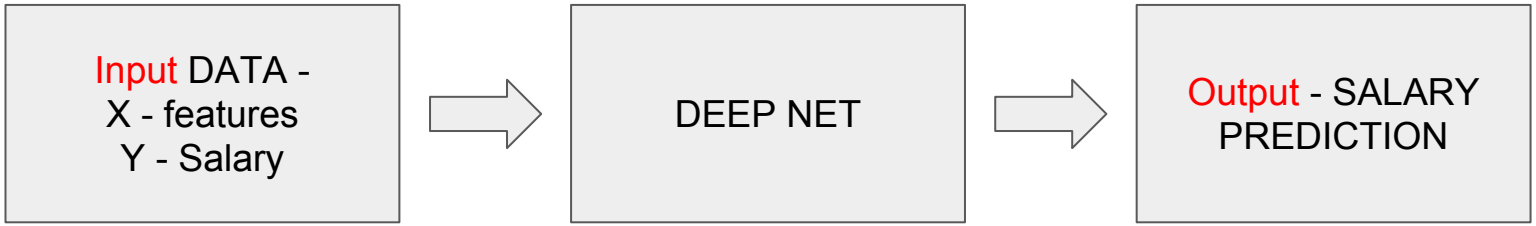
Which library should I learn?

- *If you want a job - MXNET / Torch - Industry Standard - Also supports R, MATLAB, Python and C++ bindings - Scales linearly with number of GPU
- For research - Theano / Tensorflow
- For ease of use / For Beginners - Keras / Caffe / Torch

Why not demo MXNET then?

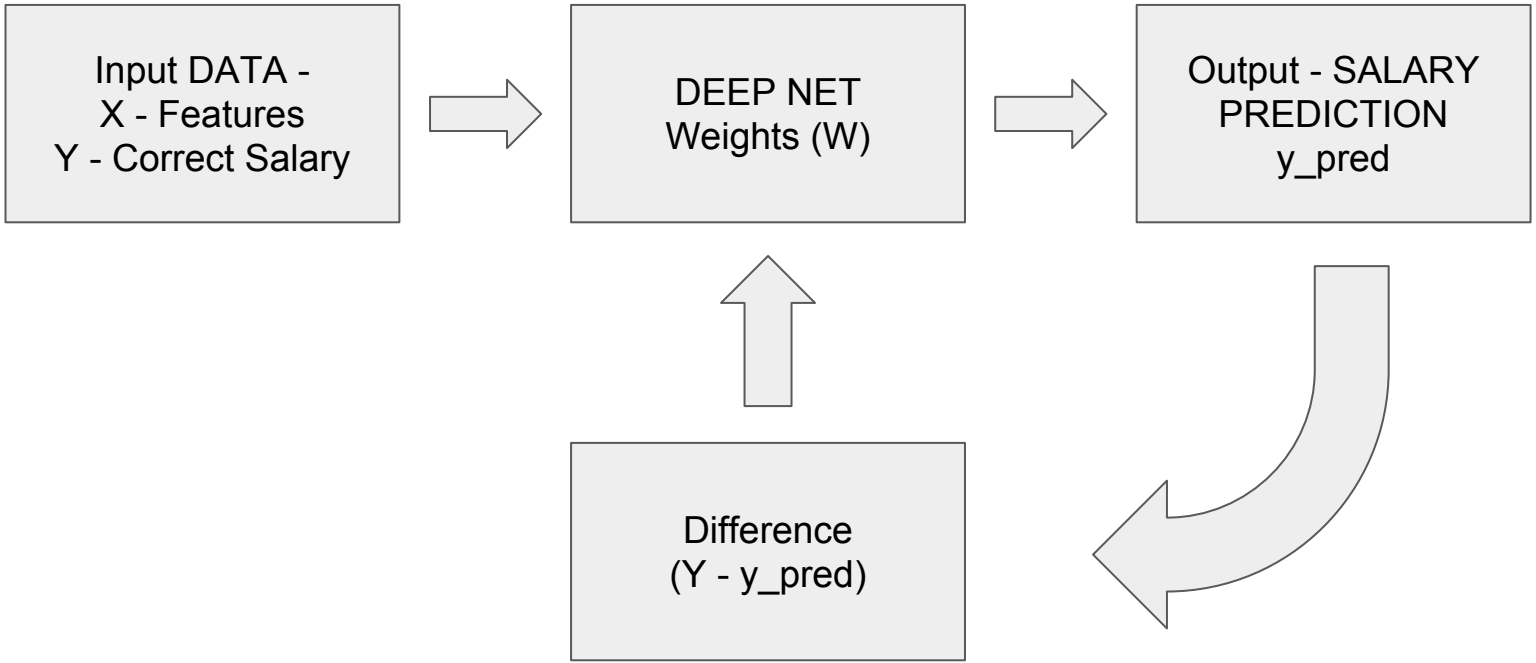
- Keras is the easiest to start with

How does a network work?

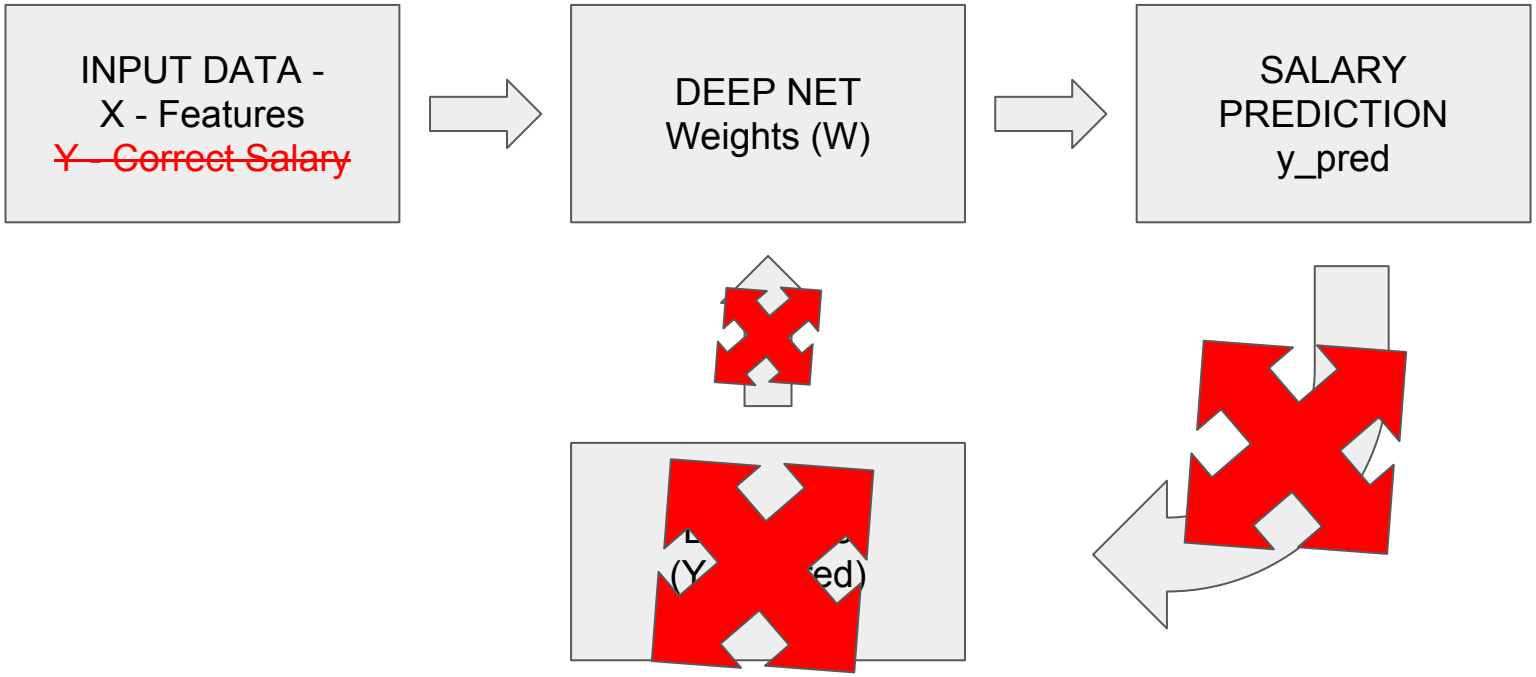


X - Features - only numbers
Y - Correct Salary - only numbers

Train Process



Prediction / Testing Process



Demo 2 : Housing Price Prediction using NN