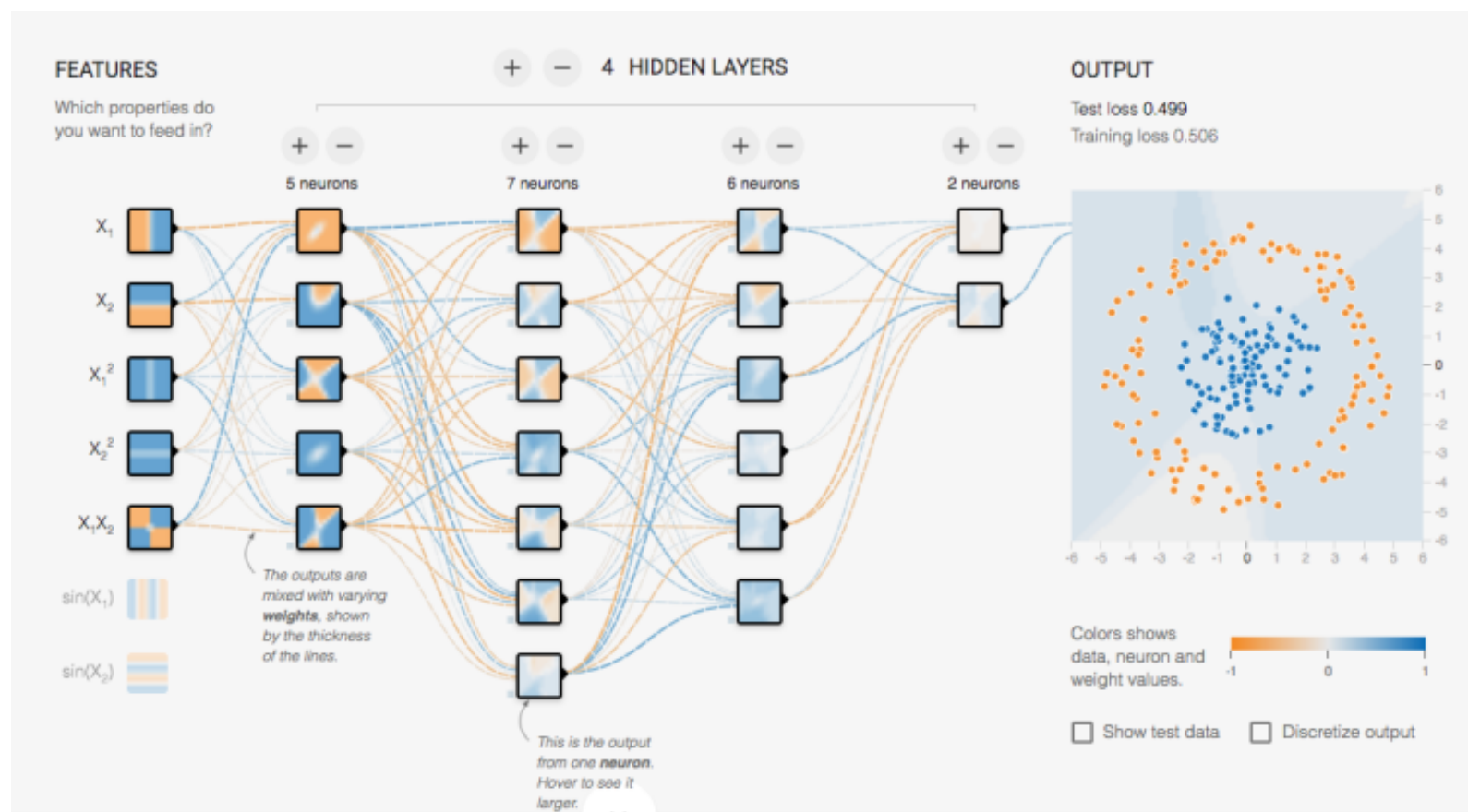


# **BIOS 635: Deep Learning in Python and R**

Kevin Donovan

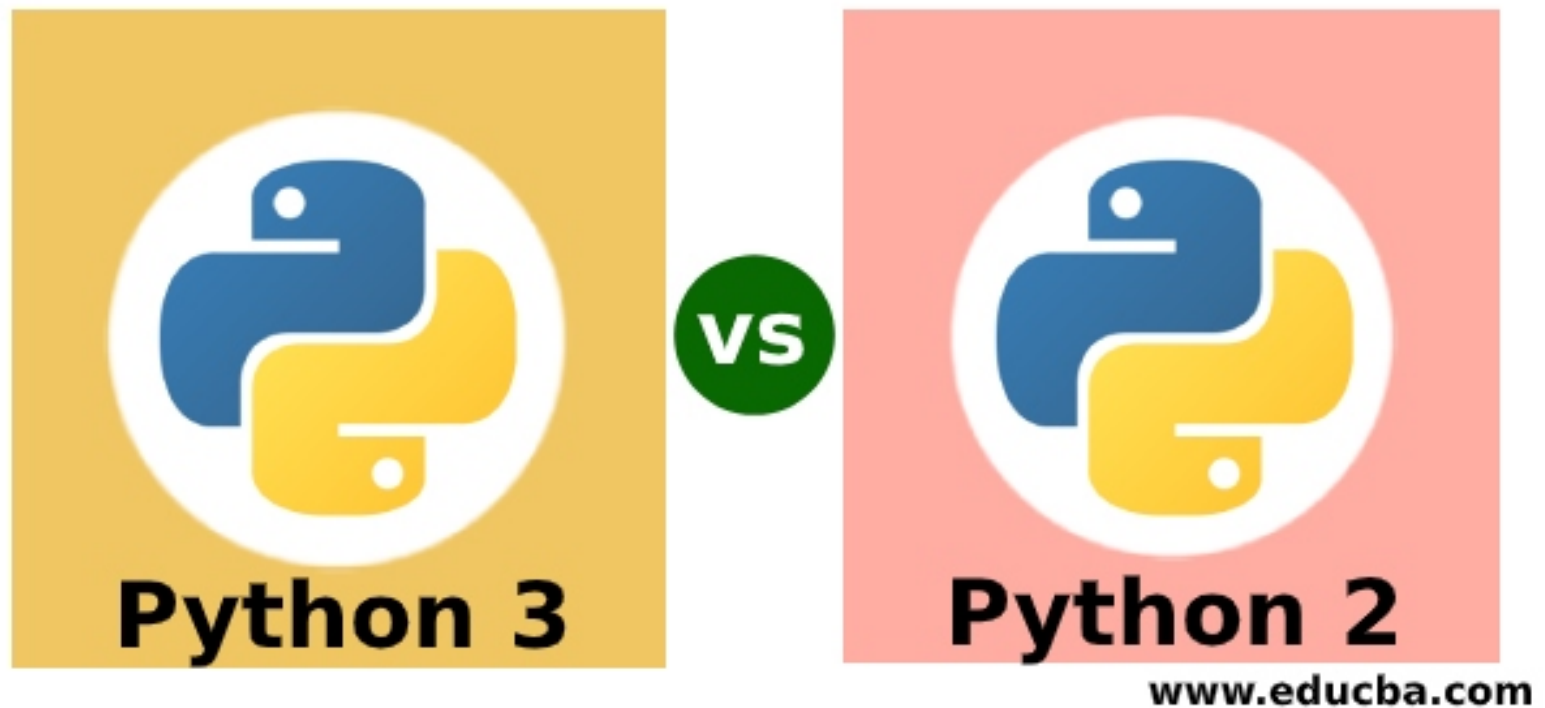
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# Deep Learning



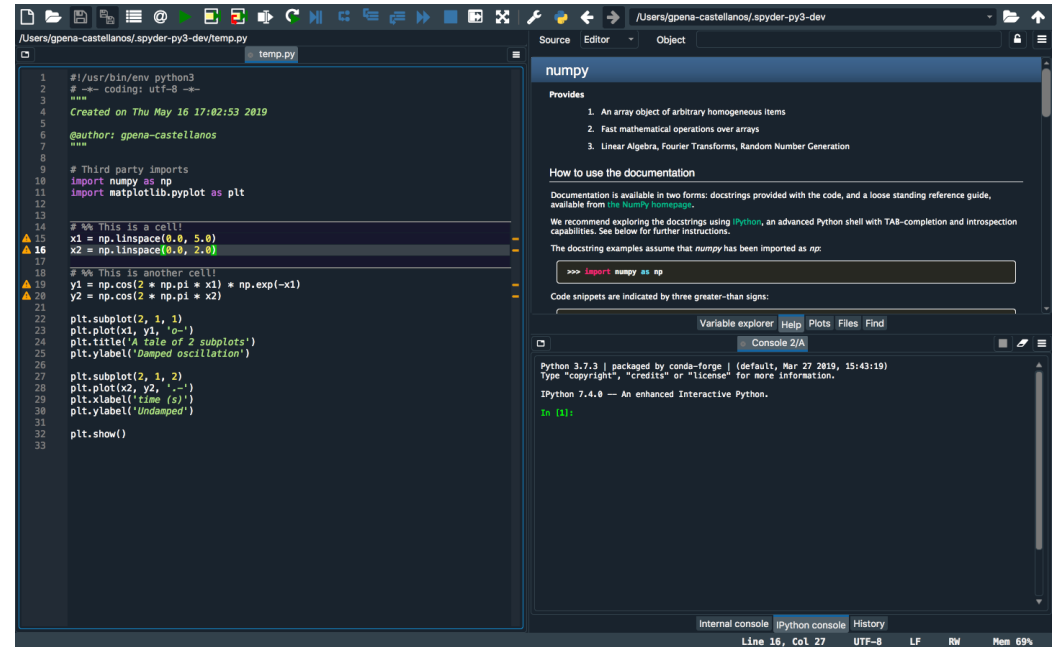
# Deep Learning

- We've discussed deep learning conceptually, but how do we implement?
- Main packages: TensorFlow and Keras in **Python**
- **Python** is a general computing language with packages to add-in stats functionality
  - Packages: *pandas*, *numpy*, *scipy*, ...



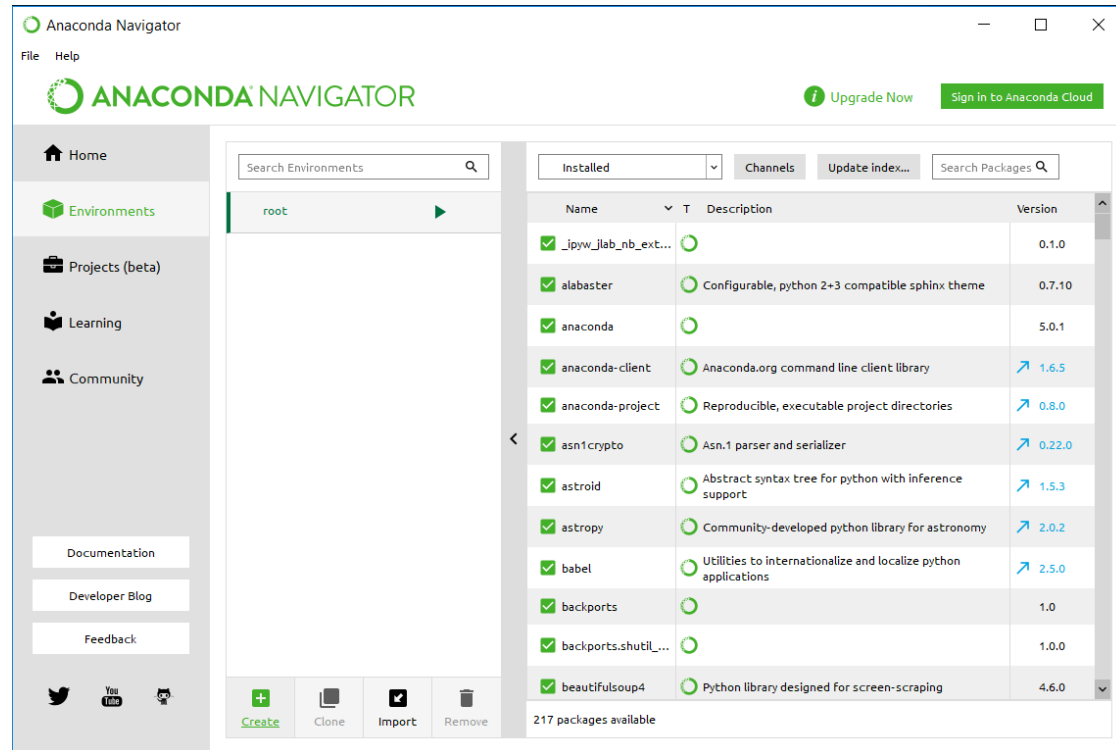
# Python

- Object-Oriented Programming Language (similar to R)
- Main IDE: Spyder



# Python

- Keeping track of packages and which are installed is cumbersome in Python
- Solution: Anaconda
  - *Create environments*



# Live Python Example

- See video lecture

# Deep Learning in R

- Luckily, TensorFlow and Keras have been officially ported to R
  - <https://tensorflow.rstudio.com/>
  - <https://keras.rstudio.com/>

