

# QuantUniversity's AI/Machine Learning Series



QuantUniversity, LLC

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# Neural Networks and NLP Workshop

Interest in Neural networks is growing with many areas from image recognition to speech processing reporting impressive results. Applications in Natural language processing with Neural networks have found multiple applications. With advances in software and hardware technologies, and interest in AI based applications growing, it is time to understand neural networks applied to natural language processing better!

In this workshop, we will discuss the basics of neural networks and natural language processing and discuss how neural approaches differ from traditional natural language modeling techniques with practical applications.

## What you will learn:

### **Natural Language Processing and Neural Network Basics**

Understand the basic concepts of NLP, traditional NLP models and Neural Networks. Know the key terminologies and technologies that are used for processing text data.

### **Key NLP techniques and Neural Network models**

Learn key NLP techniques including text tokenization, word embeddings (word2vec, Glove).

Learn key Deep Neural techniques and using RNNs and Encoder-Decoder networks for text processing.

### **Guided case studies, exercises and applications**

Through hands-on exercises and case studies, learn how Neural Networks can be used in various NLP applications using Keras with a Tensorflow backend

## Logistics

**Duration: 2 days**

**Next Offering: June 14<sup>th</sup>, 15<sup>th</sup> in Boston and Online**

**Registration: [QU-nlp.eventbrite.com](http://QU-nlp.eventbrite.com)**

## **Instructor:**

Sri Krishnamurthy, CFA, CAP is the founder of [QuantUniversity.com](http://QuantUniversity.com), a data and quantitative analysis company and the creator of the Analytics Certificate program ([www.analyticscertificate.com](http://www.analyticscertificate.com)). He has more than fifteen years of experience in analytics, quantitative analysis, statistical modeling and software development and has worked at Citigroup, Endeca, MathWorks and with more than 50 customers in the financial services and energy industries. Sri has trained more than 1000 students in quantitative methods, analytics and big data at QuantUniversity and at Babson College, Northeastern University and Hult International Business school.

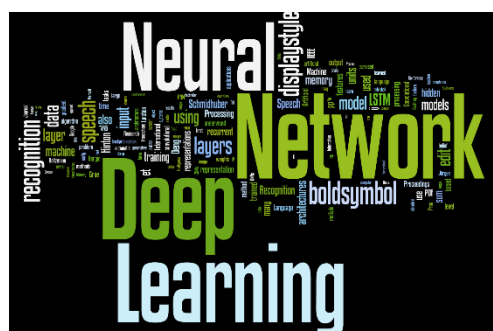
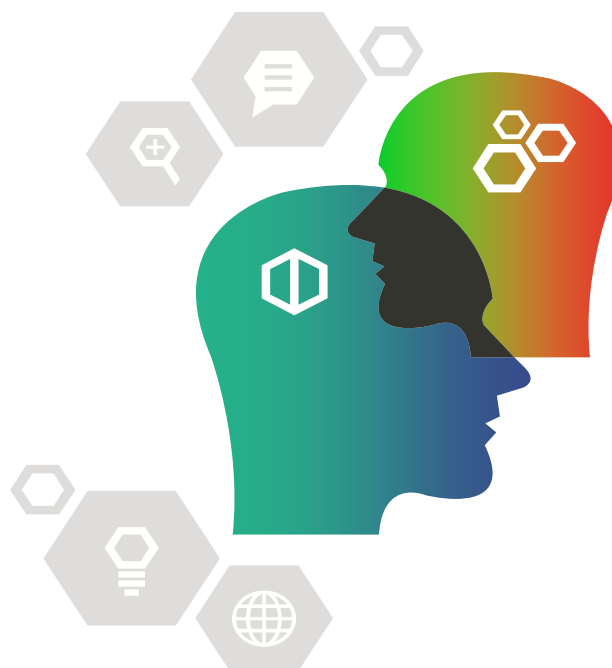


# QuantUniversity's Experience Series

## Current, Comprehensive, Practical

QuantUniversity's programs are geared towards working professionals and provides actionable and practical insights on various AI/Machine Learning related topics. Through our **Explore-Experience-Excel** programs, we provide unbiased, curated content developed by experts to enable you to build a knowledge base.

QuantUniversity's **Neural Networks and NLP** Workshop builds upon the **AI and Machine Learning** program and provides comprehensive coverage of the current state-of-the-art technologies with hands-on exercises to experience the power of Neural Networks.



“ AI continues to eat into the IT Budget. AI-focused hardware, software, and services to reach \$58bn by 2021, up from ~\$12bn in 2017 ”

JP Morgan research report & IDC research Forecast

## The Program



### Module 1: Basics of NLP

- Natural Language Processing Basics
- Key challenges when processing text
- Syntax and Semantics
- Text pre-processing: Tokenization, Lemmatization, Stemming
- Language Modeling
- N-Grams, Bag-of-words, Word embeddings; Word2vec, Glove

**Exercise: Working with Edgar data in Python**



### Module 2: Neural Networks

- Introduction to deep neural networks
- Introduction to Keras and Tensorflow
- MLPs, CNNs, RNNs, Encoder Decoders
- Building a Deep Neural Network with pre-trained word embeddings
- RNNs for translation, sentiment detection and other text applications

**Exercise: Neural Networks Lab**



### Module 3: NLP applications

- Designing NLP Applications
- Where do you get the Data
- Edgar, StockTwits, Twitter
- Potential applications:
  - Text Summarization
  - Chatbots
  - Question-Answering
  - Sentiment analysis
  - Document Classification

**Exercise: Illustrations on various NLP techniques using Python**



### Module 4: Case studies

- Pipelines for NLP
    - Data Pre-processing
    - Feature Extraction
    - Model Selection
    - Model Deployment
  - **Case study 1:** Sentiment Analysis in Keras
  - **Case study 2:** Text Summarization using Encoder-Decoder models
  - Frontier Topics
  - Future of NLP applications
- Exercise: Guided Lab**

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