



Applied Natural Language Processing in EdTech



What are we covering

- Meet your Instructors and Support Team
- What is Applied Machine Learning
- Problem Statement
- Module 1 Exploratory Data Analysis
- Module 2 Feature Extraction and Classification
- Module 3 Deep Learning Classification
- Conclusion

Meet your instructors and support team



David Alyea
Senior Data Scientist



Robert Pugh
Senior Natural Language Processing Engineer



John D'Souza
Senior Machine Learning Engineer

What is Applied Machine Learning?

1. Problem Definition
2. Analyze Data
3. Prepare Data
4. Select Features/Algorithm(s)
5. Evaluate Algorithms
6. Improve Results (May require revisiting steps 4 & 5)
7. Present Results to stakeholders

Applied ML in Education

- **Question Answering**
- Question Generation
- Automatic Assessment
- **Academic document tagging**
- **Identifying difficulty level of questions**
- Personalized and Adaptive learning
- **Study tools**
- Assessment creation
- **Intelligent tutoring**

Problem Statement

Given a question, we want to predict the type of answer it elicits. For example, a question like

Who was the first prime minister of Canada?

is eliciting the name of a **human**, whereas a question like

How do you peel a hard-boiled egg?

requires an answer that is a **description** of a process.

This task has proven to be quite useful in the area of Information Retrieval-based question-answering, since it allows you to significantly narrow down the space of possible answers.

Question Answer Classification Labels

- Abbreviation (abbreviation, expression)
 - ◆ “What does S.O.S. stand for?”
- Entity (e.g. animal, event, product, etc.)
 - ◆ “What fowl grabs the spotlight after the Chinese Year of the Monkey?”
- Description (e.g. definition, manner, etc.)
 - ◆ “What is paracetamol?”
- Human (e.g. individual, group, etc)
 - ◆ “What was the name of the first Russian astronaut to do a spacewalk?”
- Location (e.g. city, country, etc)
 - ◆ “Which two states enclose Chesapeake Bay?”
- Numeric (e.g. count, date, distance, etc.)
 - ◆ “How many points make up a perfect fivepin bowling score?”

Getting Started - How to engage with us

Please go to

<https://github.com/coursehero/ai-odsc-workshop-2019>

- Follow set-up instructions in README...3 set up options:
 - 1) Local (virtual environment recommended)
 - 2) Mybinder
 - 3) Colab

When you have Questions, just...
raise your hand

or

wave to a person in a Course Hero shirt

Here we go...

