CS230

Fall 2018
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Course details
5 “courses”:

- **C1**: Neural Networks and Deep Learning
- **C2**: Improving Deep Neural Networks
- **C3**: Strategy for Machine Learning Projects
- **C4**: Convolutional Neural Networks
- **C5**: Sequence Models

**Example**: C2M3: Course 2 Module 3

Schedule is on [http://cs230.stanford.edu/syllabus.html](http://cs230.stanford.edu/syllabus.html)

We are going to use the Coursera Platform: [www.coursera.org](http://www.coursera.org)

The class forum is on Piazza: [piazza.com/stanford/fall2018/cs230](http://piazza.com/stanford/fall2018/cs230)
One week in the life of a CS230 student

1 module

Watch videos on Coursera ≈ 1h30

Solve quiz ≈ 20min

Complete programming assignments ≈ 1-3h

1 week of class ≈ 2 modules + Go to in-class lecture ≈ 1h20 + TA sections on Fridays ≈ 1 hour + 15min project mentorship with TA

Assignments and Quizzes are due every Wednesday at 11am
Do not follow the deadlines displayed on Coursera!!!
LiveSlides web content

To view
Download the add-in.
liveslides.com/download
Start the presentation.
Grading Formula

\[ \text{Grade} = 0.02A + 0.08Q + 0.25Pa + 0.25M + 0.40Pr \]

- \( A \) = Attendance
- \( Q \) = Quizzes
- \( Pa \) = Programming assignments
- \( M \) = Midterm
- \( Pr \) = Final-project

Active Piazza participation = 1\% bonus
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Programming assignments
Projects: SIGN language detection

$y = 0$

$\begin{bmatrix} 1 \\ 0 \\ 0 \\ 0 \\ 0 \end{bmatrix}$

$y = 1$

$\begin{bmatrix} 0 \\ 1 \\ 0 \\ 0 \\ 0 \end{bmatrix}$

$y = 2$

$\begin{bmatrix} 0 \\ 0 \\ 1 \\ 0 \\ 0 \end{bmatrix}$

$y = 3$

$\begin{bmatrix} 0 \\ 0 \\ 0 \\ 1 \\ 0 \end{bmatrix}$

$y = 4$

$\begin{bmatrix} 0 \\ 0 \\ 0 \\ 0 \\ 1 \end{bmatrix}$

$y = 5$

$\begin{bmatrix} 0 \\ 0 \\ 0 \\ 0 \\ 1 \end{bmatrix}$
Assignment: The Happy House

\[ y = 0 \]

\[ y = 0 \]

\[ y = 1 \]

\[ y = 1 \]

can’t enter the Happy House

can enter the Happy House!
Assignment: Object detection

[Another fun video generated with YOLOv2 by J. Redmon: https://youtu.be/VOC3huqHrss]
Projects: others

- Optimal goalkeeper shoot prediction
- Car detection
- Face recognition
- Art generation
- Music generation
- Text generation
- "I love you"
- Emojifier
- Machine translation
- Trigger word detection

And many more…
Projects: others

- Optimal goalkeeper shoot prediction
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- And many more…
Art Generation with Deep Learning

Content Image

Style Image

Generated Image

[L. Gatys et al.: Image Style Transfer Using Convolutional Neural Networks, 2015]
Projects: others

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And many more…
Example of projects
Projects: others

Coloring Black&White pictures with Deep Learning

Predicting price of an object from a picture

Neural Network

300$
Predicting atom energy based on atomic-structure
Visual Question Answering
Cancer/Parkinson/Alzheimer detection
Activity recognition in video
Music genre classification / Music Compression
Accent transfer in a speech
Generating images based on a given legend
Detecting earthquake precursor signals
...
And many more...
To sum up

1. You will learn about wide range of deep learning topics
2. The course is very applied, you will code these applications
3. You have access to mentorship to build an outstanding project in 10 weeks

For next Wednesday (10/03) 11am:
- Create Coursera account and join the private session using the invitation
- Finish C1M1 & C1M2
- 2 Quizzes:
  ★ Introduction to deep learning
  ★ Neural Network Basics
- 2 programming Assignments:
  ★ Python Basics with Numpy
  ★ Logistic Regression with a neural network mindset

For Friday (09/28) end of the day:
- Find project team-mates and fill-in the Google form that will be posted on Piazza.

Download your notebooks after you finished them!
Follow only the website deadlines!
LiveSlides web content

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