

# CS230

Fall 2018  
Andrew Ng, Kian Katanforoosh

# Teaching Team

Instructor



Andrew Ng

Instructor



Kian Katanforoosh

Course coordinator



Swati Dube

Course advisor



Younes Bensouda Mourri

Co-head TAs



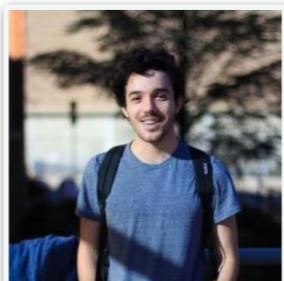
Aarti Bagul



Abhijeet Shenoi



Steven Chen



Daniel Kunin



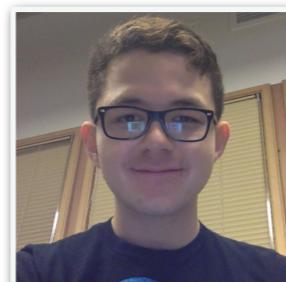
Cristian Aramburu



Jay Whang



Sarah Najmark



Pedro Garzon



Weini Yu



Ahmad-reza Momeni



Patrick Cho



Shubhang Desai  
(section leader)

# Course details

## 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

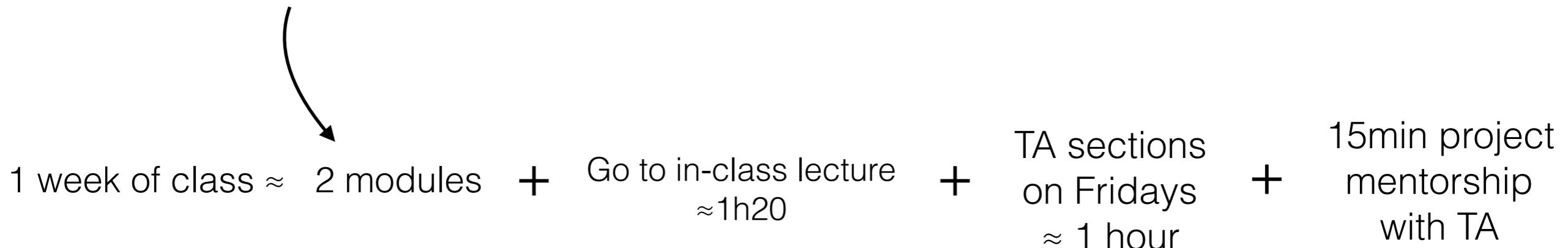
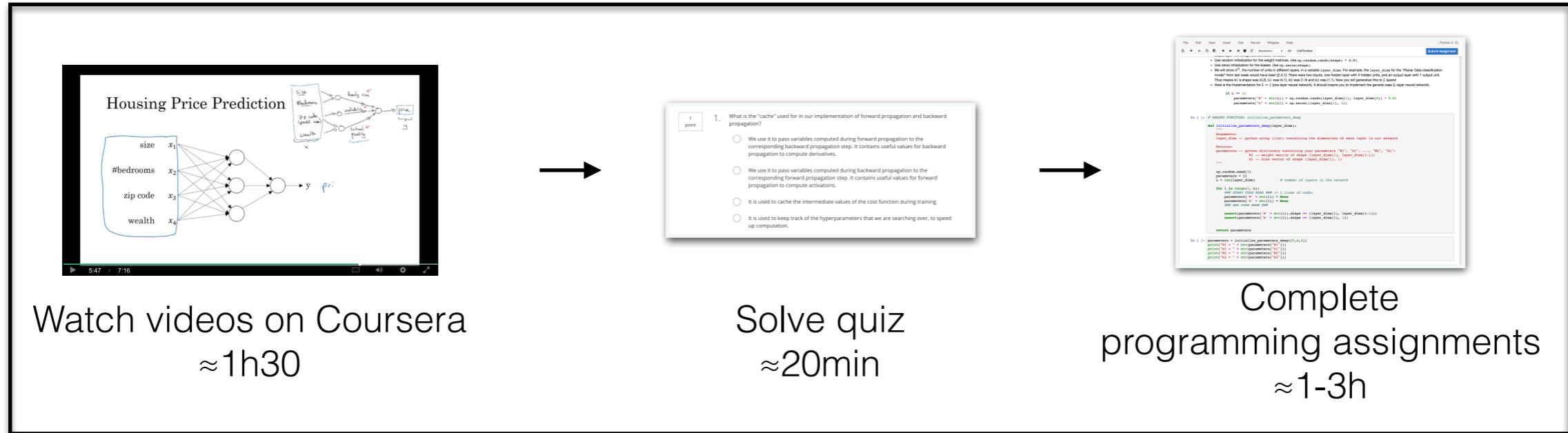
Schedule is on <http://cs230.stanford.edu/syllabus.html>

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

The class forum is on Piazza: [piazza.com/stanford/fall2018/cs230](https://piazza.com/stanford/fall2018/cs230)

# One week in the life of a CS230 student

1 module



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



## ► LiveSlides web content

To view

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**Start the presentation.**

## Grading Formula

$$Grade = 0.02A + 0.08Q + 0.25Pa + 0.25M + 0.40Pr$$

A = Attendance

Q = Quizzes

Pa = Programming assignments

M = Midterm

Pr = Final-project

*Active Piazza participation = 1% bonus*



## ► LiveSlides web content

To view

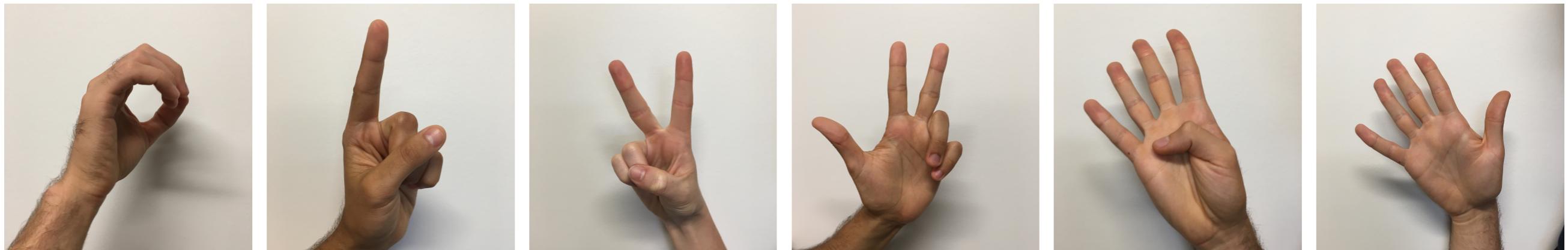
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# Programming assignments

## Projects: SIGN language detection



$$y = 0$$

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

$$y = 1$$

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

$$y = 2$$

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

$$y = 3$$

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

$$y = 4$$

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

$$y = 5$$

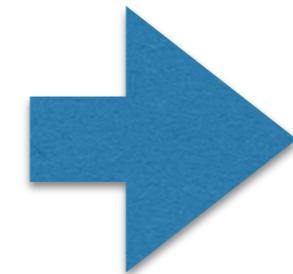
$$\begin{bmatrix} 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 1 \end{bmatrix}$$

## Assignment: The Happy House

$y = 0$



$y = 0$

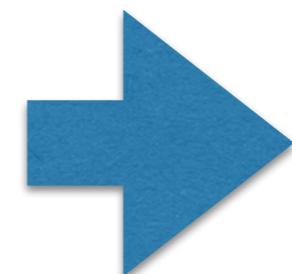
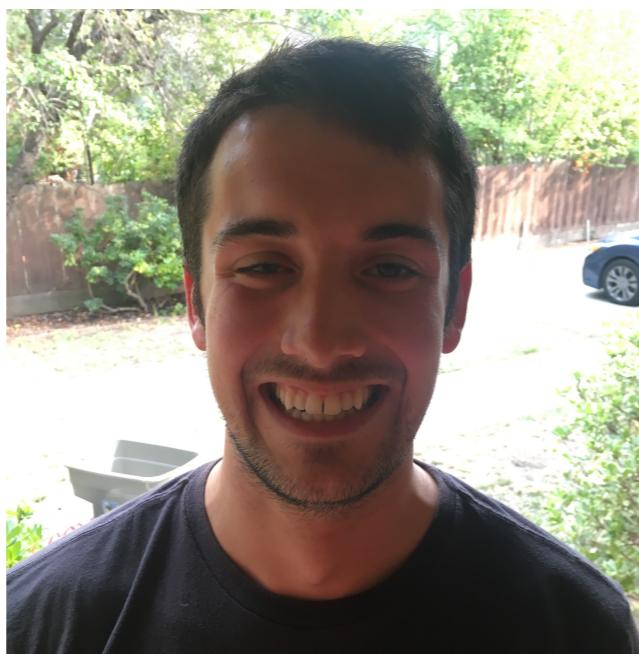


can't enter  
the Happy House

$y = 1$

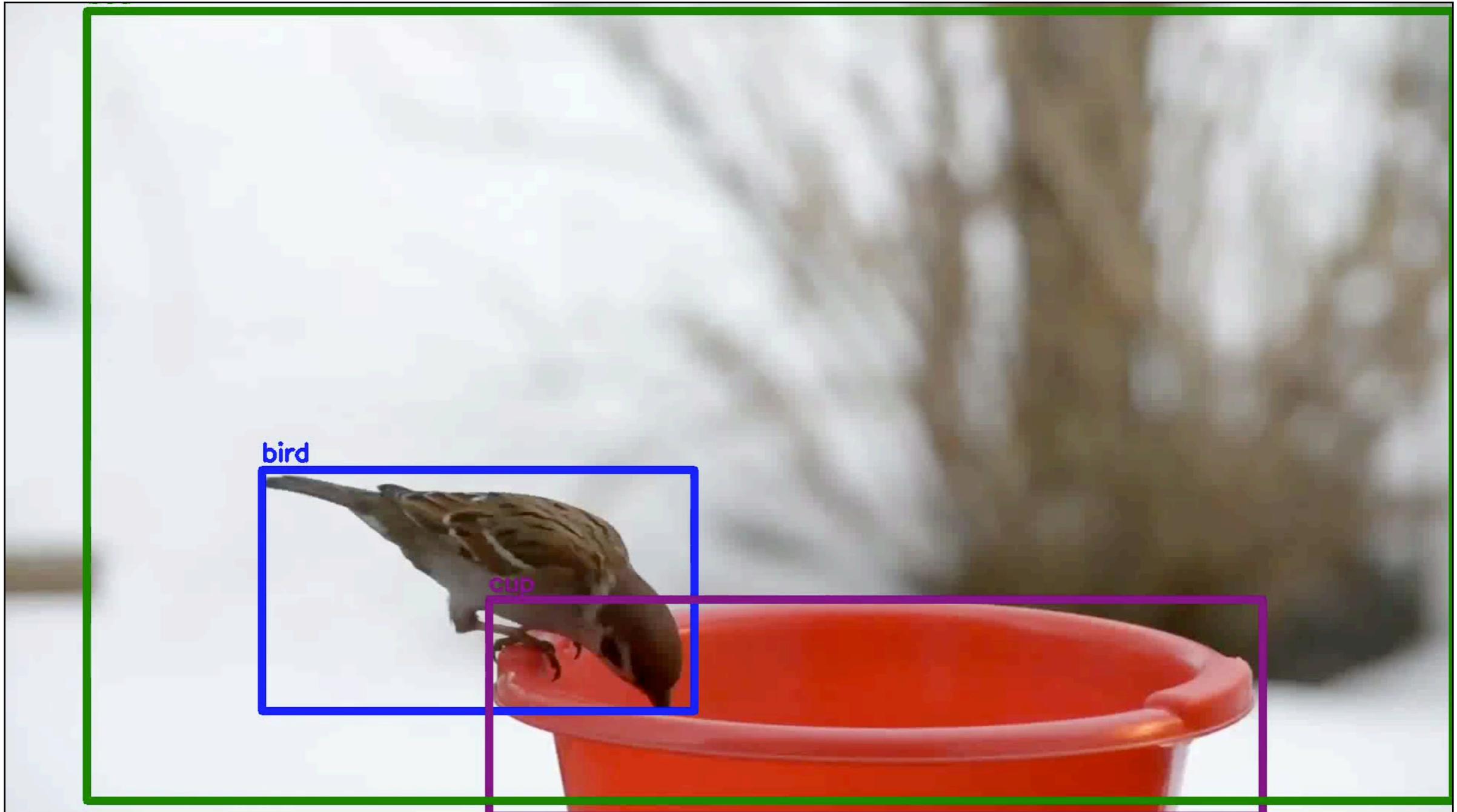


$y = 1$



can enter  
the Happy House!

## Assignment: Object detection



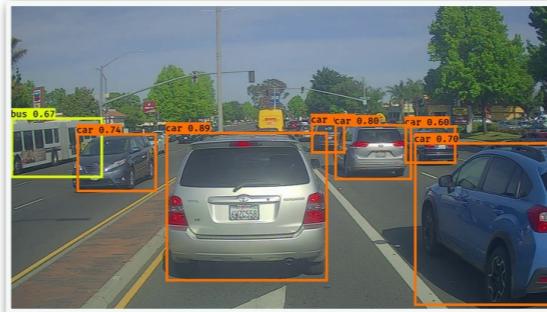
[Joseph Redmon, Ali Farhadi: YOLO9000: Better, Faster, Stronger, 2016]

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

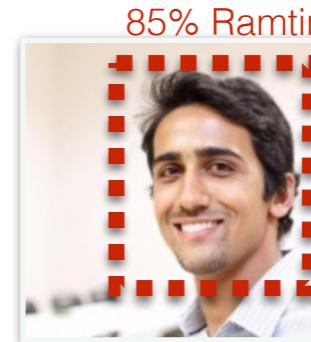
## Projects: others



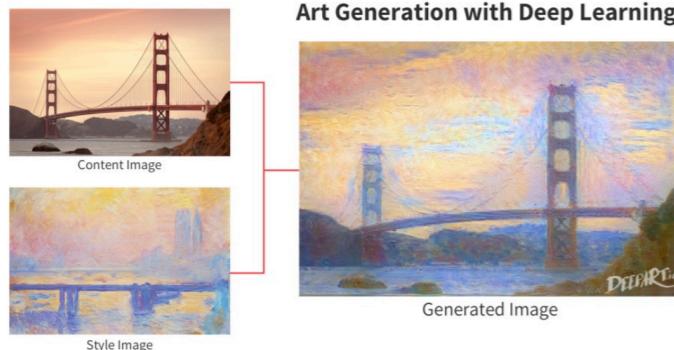
Optimal goalkeeper shoot prediction



Car detection



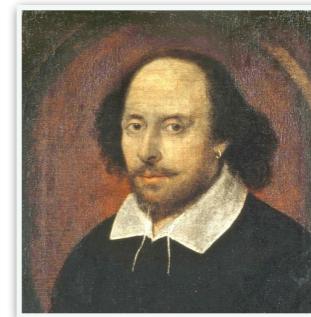
Face recognition



Art generation



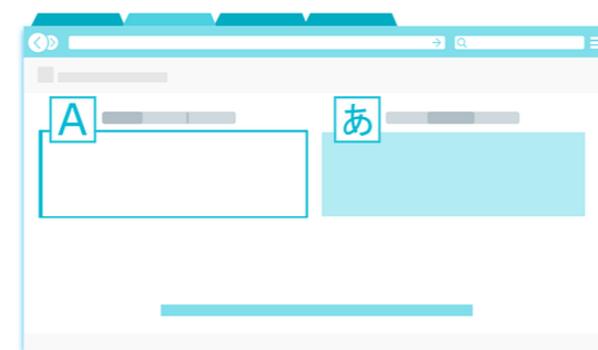
Music generation



Text generation

“I love you”  
↓

Emojifier

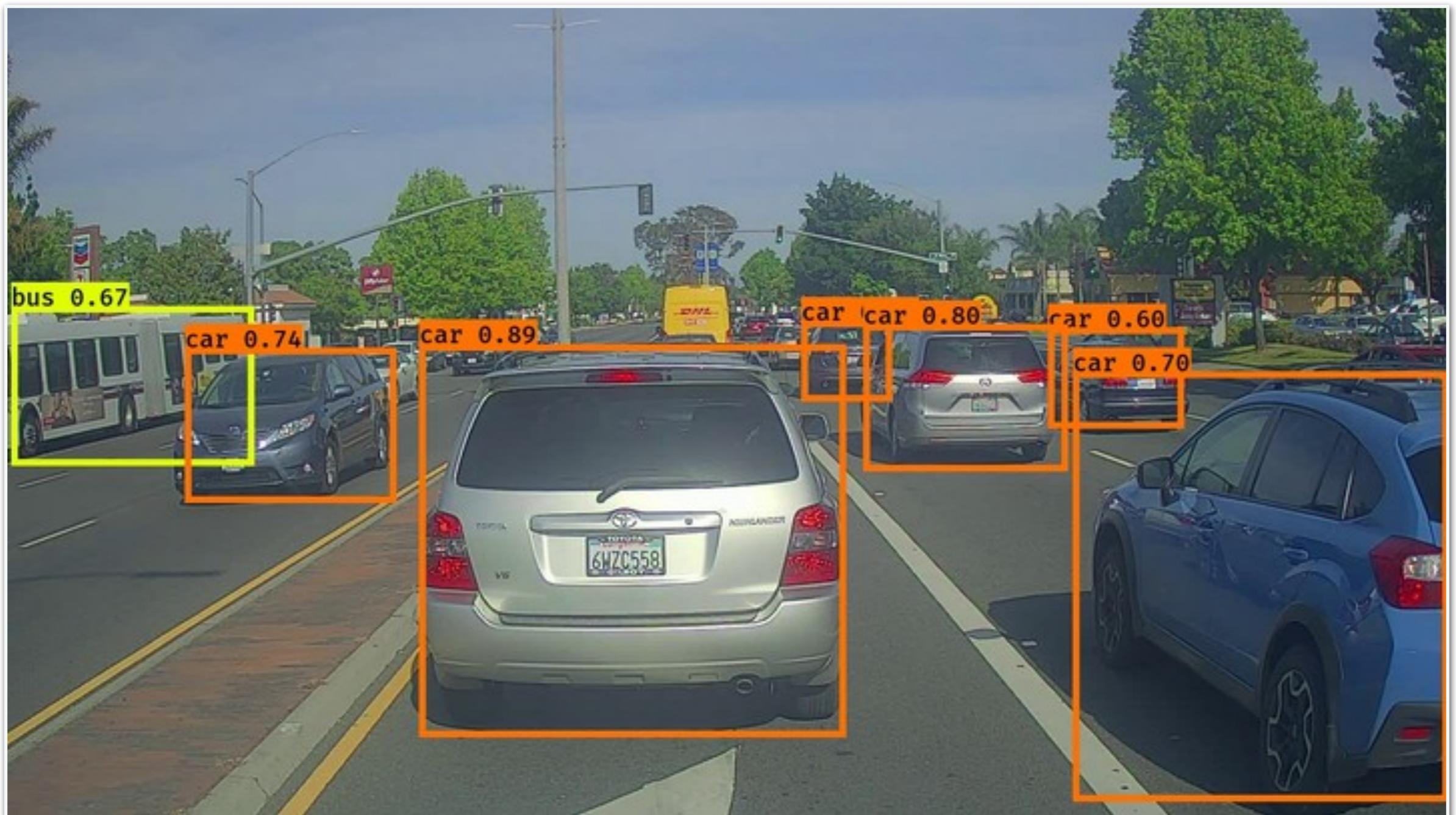


Machine translation



Trigger word detection

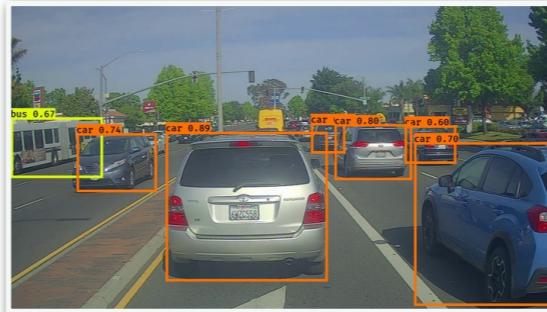
And many more...



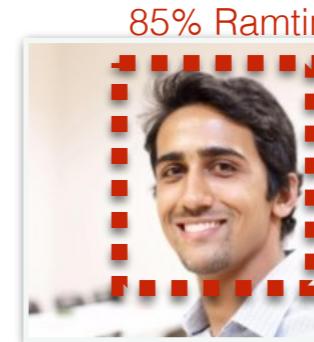
## Projects: others



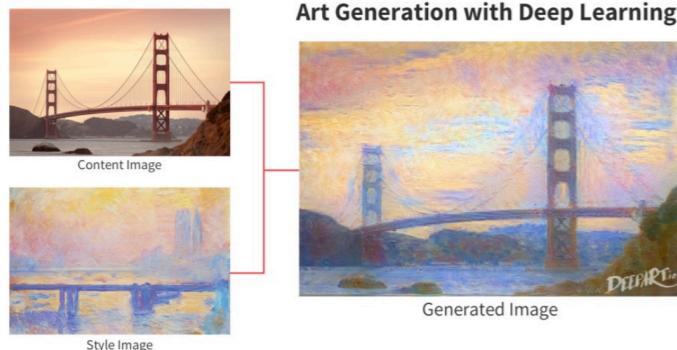
Optimal goalkeeper shoot prediction



Car detection



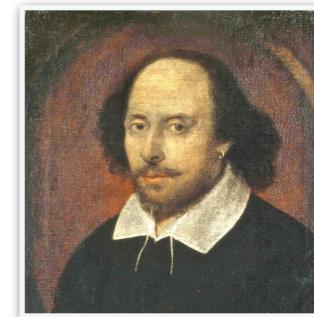
Face recognition



Art generation



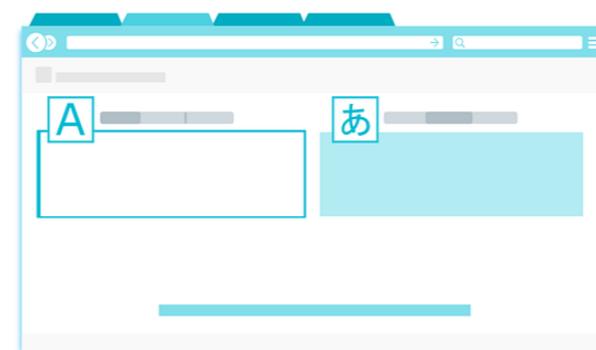
Music generation



Text generation

“I love you”  
↓

Emojifier



Machine translation



Trigger word detection

And many more...

## Art Generation with Deep Learning



Content Image



Style Image

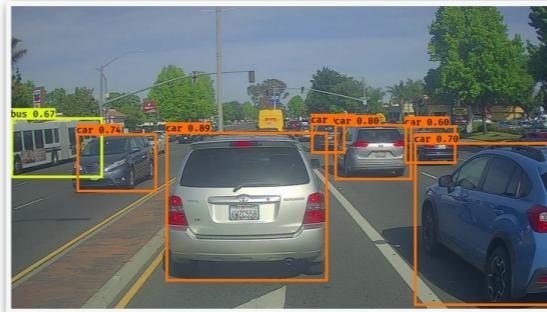


Generated Image

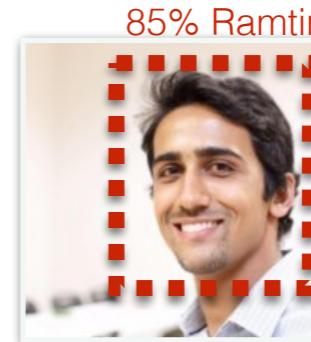
## Projects: others



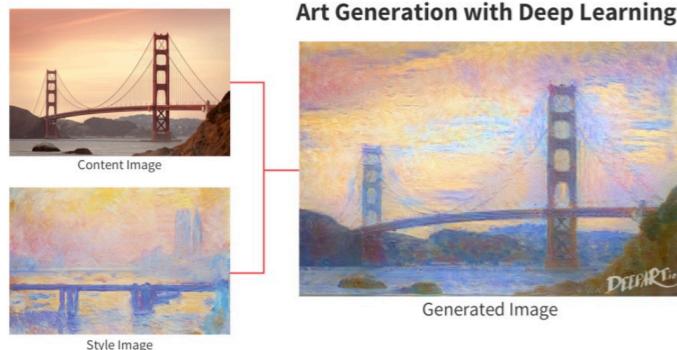
Optimal goalkeeper shoot prediction



Car detection



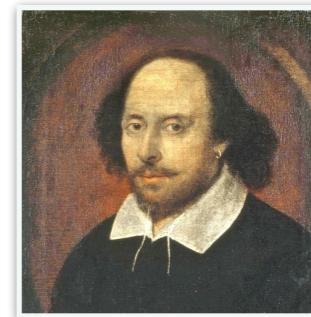
Face recognition



Art generation



Music generation



Text generation

“I love you”  
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Emojifier



Machine translation



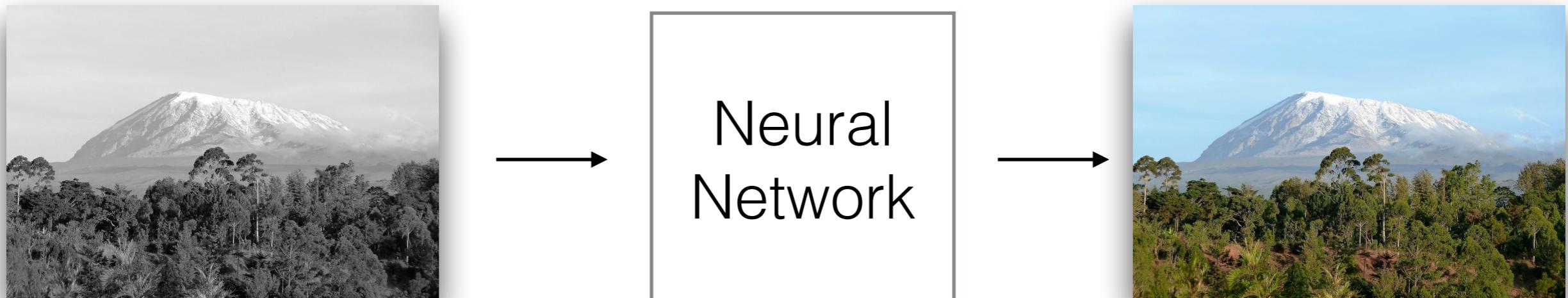
Trigger word detection

And many more...

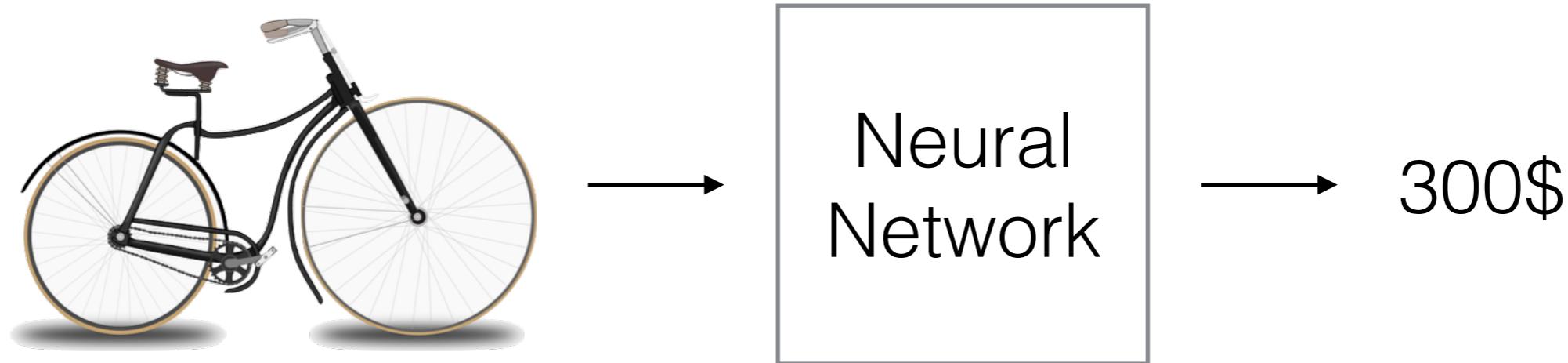
# Example of projects

## Projects: others

Coloring Black&White pictures with Deep Learning



Predicting price of an object from a picture



**And many more...**

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

...

## 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!



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To view

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