Day 1: Course Overview

Topics (+ capstone projects)

- Audio - song recognition
- Vision - face ID
- Language - semantic search
- Final Project

Ethos

- No homework
- No exams
- CogWeb (if you need it)

Jupyter Notebook

Notebook Notes

- Code is executed in individual cells, but has shared notebook-wide memory

Handy Commands

```
Esc+A - add cell above
Esc+B - add cell below
Esc+D+D - delete cell
Shift+Tab - opens docstring
```

Python/Numpy Notes

- Tuple Enumeration and Unpacking

```
name = ["a", "b", "c"]
# capitalize each name in the list "name"

# common way
capital_names = []
```

```
for i in range(len(name)):
  capital_names.append(names[i].capitalize())
print(capital_names)

# better way
capital_names = []
for i, single_name in enumerate(name):
  print(i, single_name)
  capital_names.append(single_name.capitalize())
print(capital_names)
```

- Zip Command

```
# zip
name = ["a", "b", "c"]
countries = ["Algeria","Bhutan","Chad"]

# common way
for i in range(len(countries)):
  print("%s is for %s" % (name[i], countries[i]))

# better way
for letter, country in zip(name, countries):
  print(letter + " is for " + country)
```

- List Comprehensions

```
items = []

# common way
for n in range(100):
  items.append(n**2)
print(items)

# better way
items = [n**2 for n in range(100)]
print(items)
```

- Inline If-Else

```
x = 10

# common way
if x < 20:
  y = 3
```

```
else:
  y = 33
print(y)

# better way
y = 3 if x < 20 else 33
priny(y)
```

- Negative Indexing

```
countries = ["Algeria","Bhutan","Chad"]

# common way
print(countries[len(countries)-1])

# better way
print(countries[-1])
```

```
x = list(range(100))

# common way
```

- F-strings

```
cows_count = 99
chickens_count = 42

# I want to print "I have 99 cows and 42 chickens"
# I want to print "I have [99+42] animals"

# common way
print("I have " + str(cows_count) + " cows and " + str(chickens_count) + " chickens")
print("I have " + str(cows_count+chickens_count) + " animals")

# better way
print(f"I have {cows_count} cows and {chickens_count} chickens")
print(f"I have {cows_count+chickens_count}" animals)
```