

Harvard

Yá'át'ééh 🖐️

CRESTLEX 3.0

CReating **E**ffective **ST**em
Learning **EX**periences

with Navajo Tech



Using Zoom

- **Ask questions**
 - Use the Zoom chat
 - Raise your hand
 - Interrupt us!
- **Cameras & Microphone**
 - Camera on if you'd like
 - **Mic muted** unless speaking



Participants (1)

 Dhilan Rama... (Host, me) Unmute More ▾

- Rename
- Edit Profile Picture

The image shows a dark-themed interface for a meeting participant list. At the top, it says "Participants (1)". Below that, there is a single participant entry for "Dhilan Rama... (Host, me)". To the left of the name is a small circular profile picture. To the right of the name are two buttons: "Unmute" and "More ▾". A dropdown menu is open from the "More" button, showing two options: "Rename" and "Edit Profile Picture".

Rename

 Enter new name here:

Dhilan R. (Harvard)

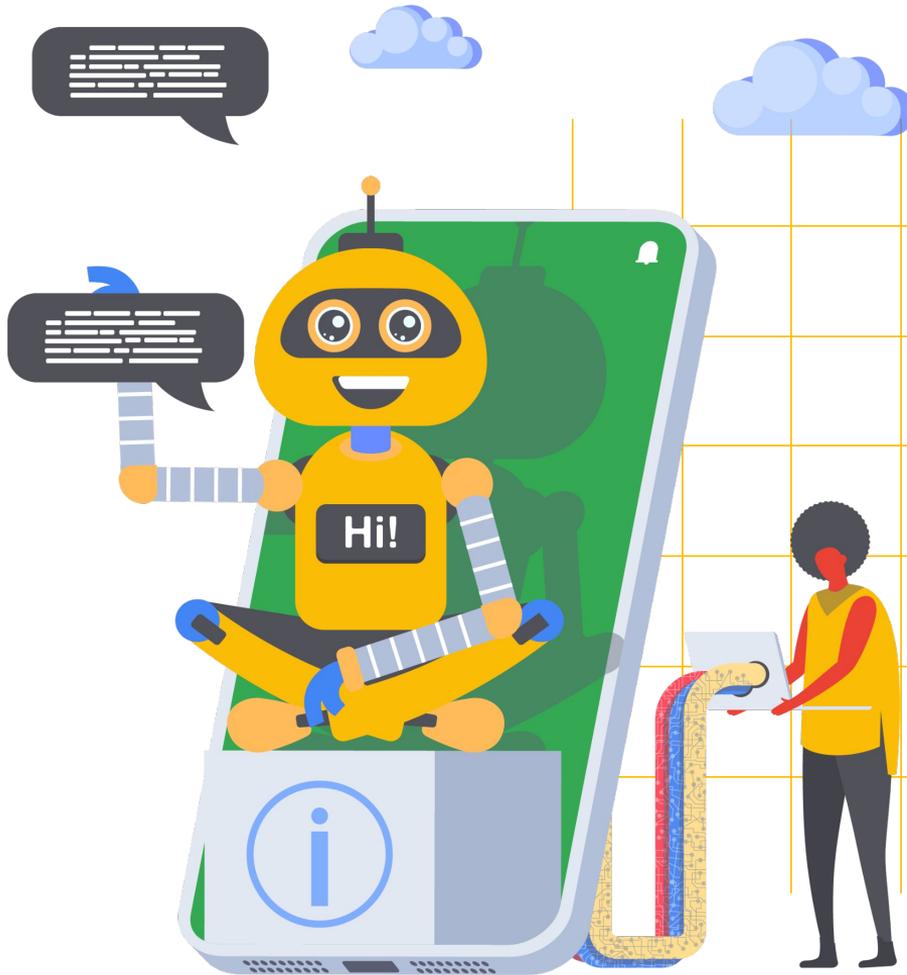
Cancel Rename

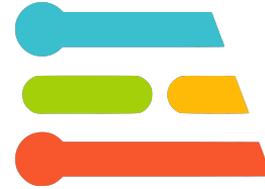
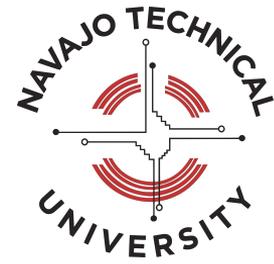
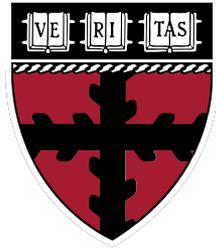
The image shows a "Rename" dialog box with a dark background. At the top, it has a title bar with three window control buttons (red, yellow, grey) and the text "Rename". Below the title bar, there is a blue rounded square icon containing a white video camera symbol. To the right of the icon is the text "Enter new name here:". Below this text is a text input field with a blue border, containing the text "Dhilan R. (Harvard)". At the bottom of the dialog, there are two buttons: a grey "Cancel" button and a blue "Rename" button.

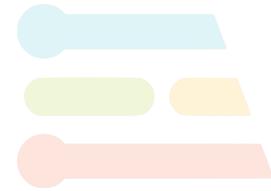
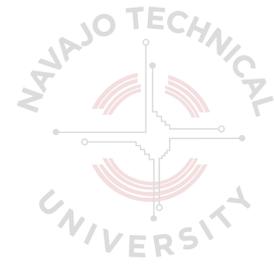
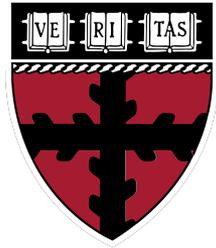
Harvard

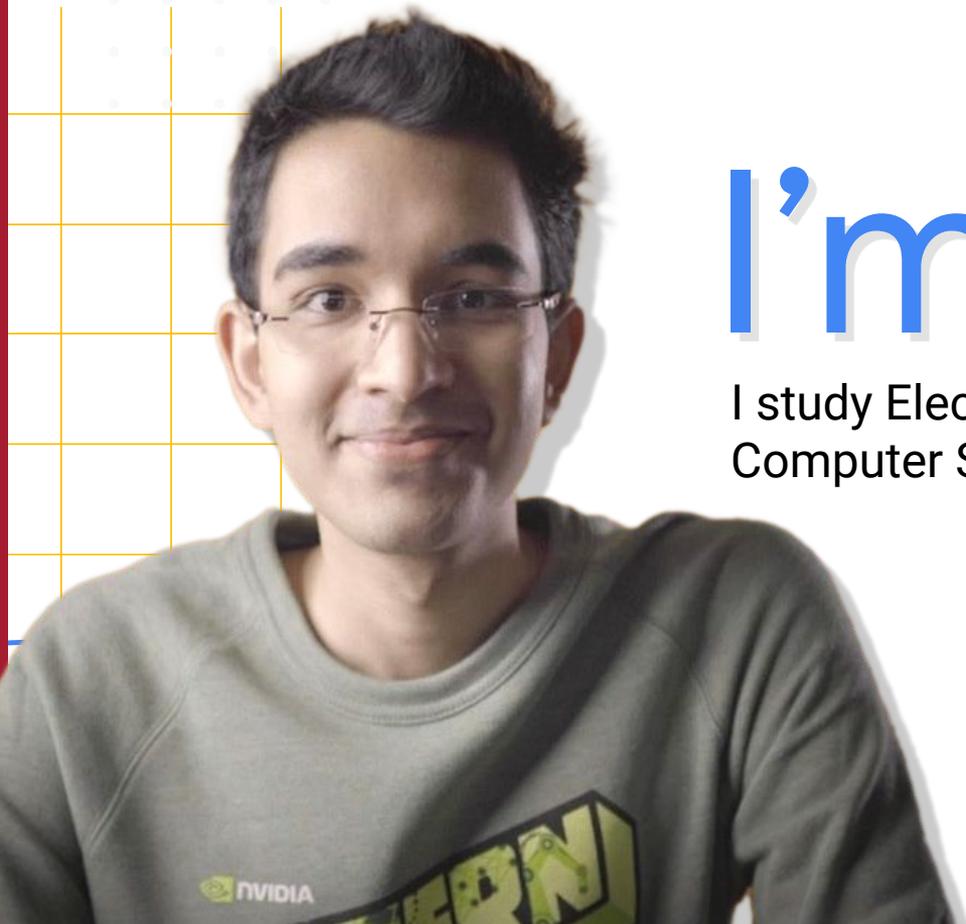
How ML works?

with Professor VJ



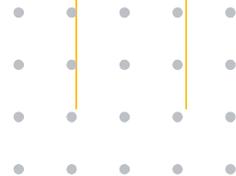
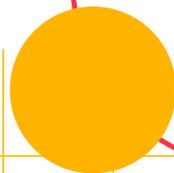


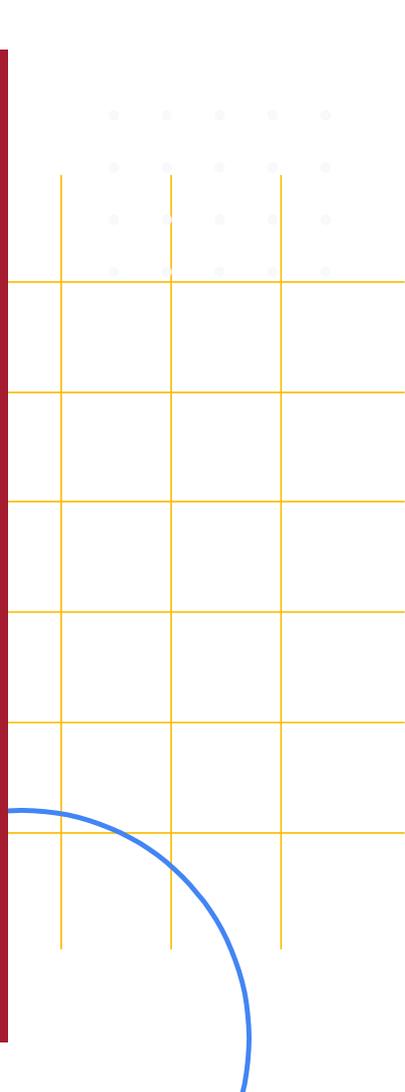




I'm Dhillan!

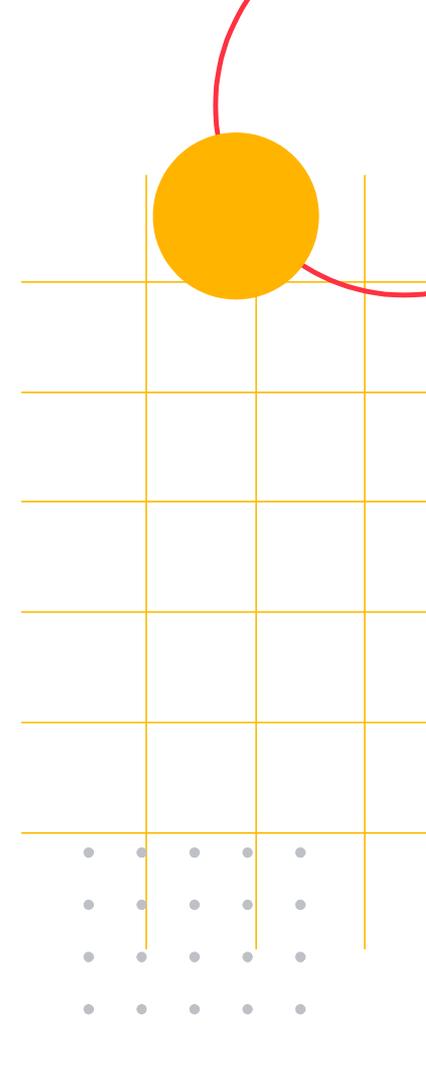
I study Electrical Engineering and
Computer Science at **Harvard**.





review

from **yesterday!**



AI and ML for today and tomorrow...



Laurence Moroney
@lmoroney

Consider Activity Detection



```
if(speed<4){  
    status=WALKING;  
}
```



```
if(speed<4){  
    status=WALKING;  
} else {  
    status=RUNNING;  
}
```



```
if(speed<4){  
    status=WALKING;  
} else if(speed<12){  
    status=RUNNING;  
} else {  
    status=BIKING;  
}
```



```
// ???
```



```
0101001010100101010
1001010101001011101
0100101010010101001
0101001010100101010
```

Label = WALKING



```
1010100101001010101
0101010010010010001
0010011111010101111
1010100100111101011
```

Label = RUNNING



```
1001010011111010101
1101010111010101110
1010101111010101011
111110001111010101
```

Label = BIKING



```
111111111010011101
0011111010111110101
0101110101010101110
1010101010100111110
```

Label = GOLFING



```
0101001010100101010
1001010101001011101
0100101010010101001
0101001010100101010
```

Label = WALKING



```
1010100101001010101
0101010010010010001
0010011111010101111
1010100100111101011
```

Label = RUNNING



```
1001010011111010101
1101010111010101110
1010101111010101011
111110001111010101
```

Label = BIKING



```
111111111010011101
0011111010111110101
0101110101010101110
1010101010100111110
```

Label = GOLFING

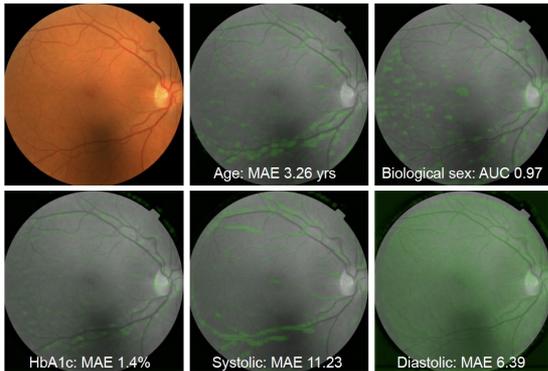
```
model = keras.Sequential([keras.layers.Dense(units=1, input_shape=[1])])
model.compile(optimizer='sgd', loss='mean_squared_error')

xs = np.array([-1.0, 0.0, 1.0, 2.0, 3.0, 4.0], dtype=float)
ys = np.array([-3.0, -1.0, 1.0, 3.0, 5.0, 7.0], dtype=float)

model.fit(xs, ys, epochs=500)

print(model.predict([10.0]))
```





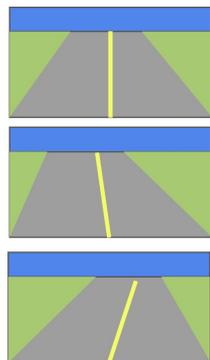
Predicting things that doctors can't predict from imaging

— Potential as a new biomarker

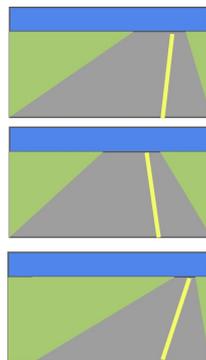
Preliminary 5-yr MACE AUC: 0.7

— Can we predict cardiovascular risk?
If so, this is a very nice non-invasive way of doing so

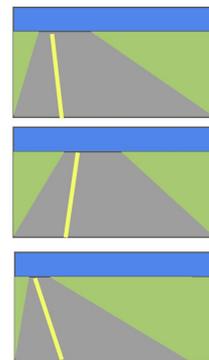
Can we also predict treatment response?



Good



Move Right!



Move Left!

Tips from **Laurence**

- Learn how to code in **Python**
- Build strong **data skills**
 - collecting data (gather)
 - cleaning data (format)
 - managing data
- Develop well-rounded **testing skills**
 - think about products as a **whole**
 - consider the **diversity** of your users



Laurence Moroney
@lmoroney

Harvard

Experimenting

with AI

with Dhilan



Artificial
Intelligence

Machine
Learning

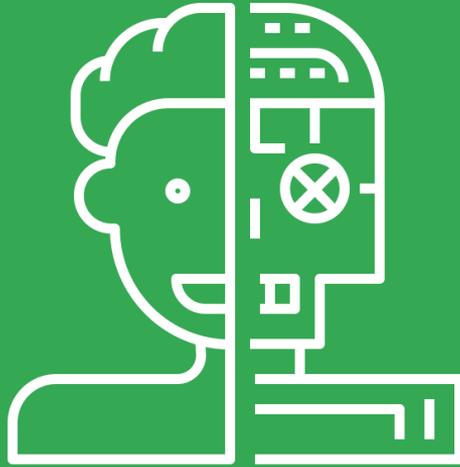
*What's the
difference?*





It's all connected!

Artificial Intelligence

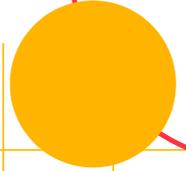
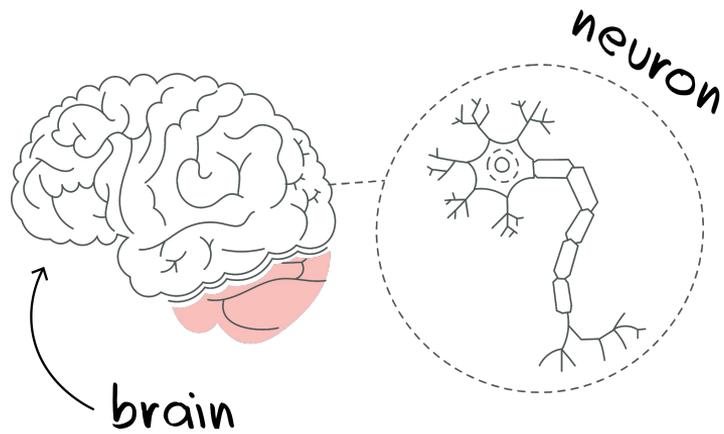


Artificial Intelligence

Machine Learning



Human Intelligence



Categorize

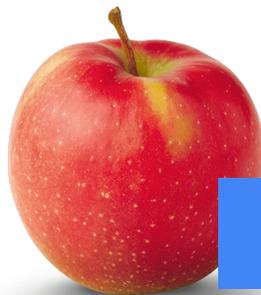
1



2



3



4



5



6



7



8



Human
Intelligence

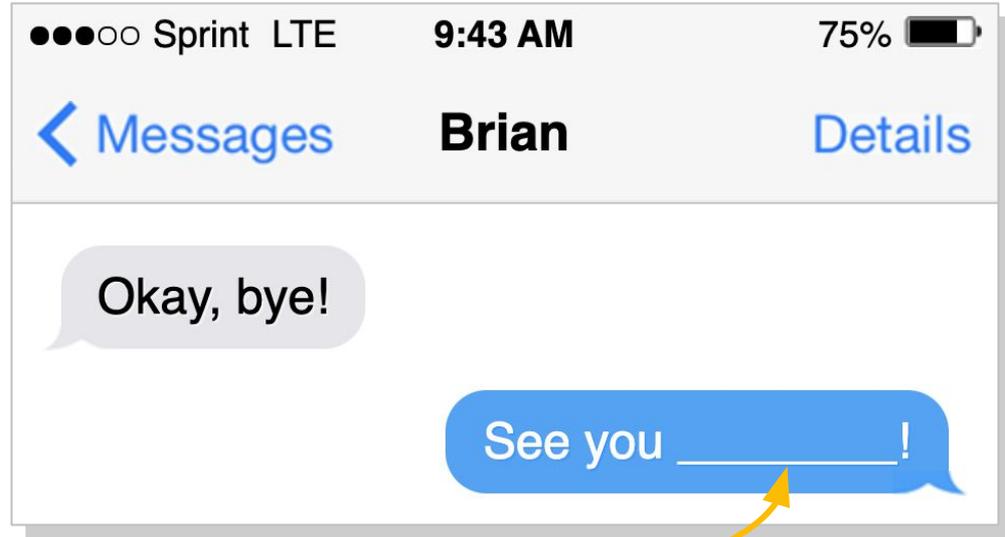
Artificial
Intelligence

Classification

Vision

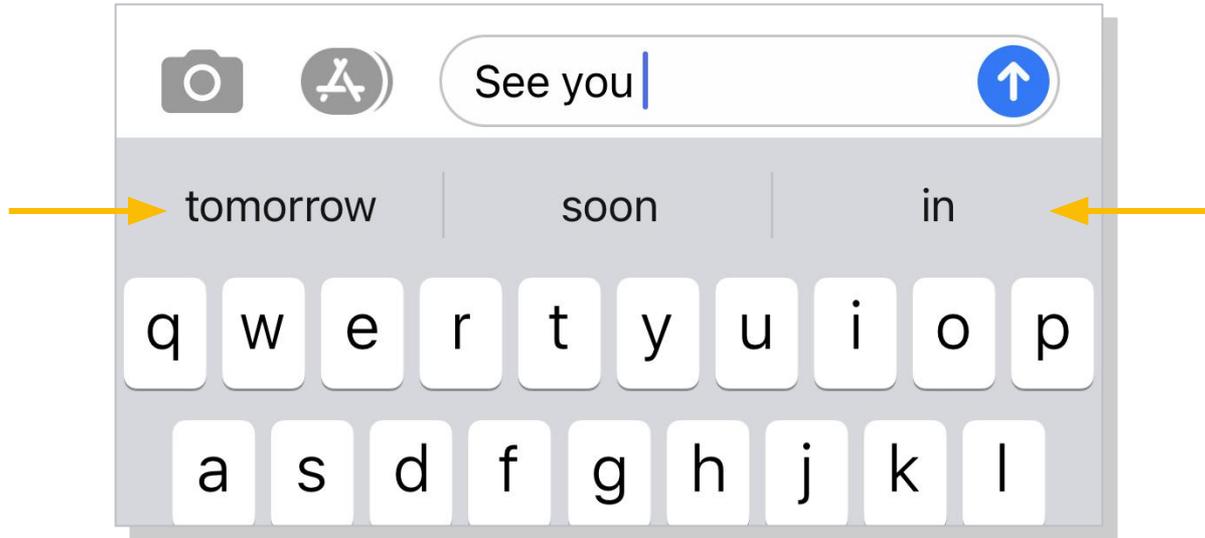
Audio

Fill in the blank



tomorrow
later

Prediction: autocomplete



Human
Intelligence

Artificial
Intelligence

Predictions

Text

Games

Photos

more





Harvard

How ML works?

with Professor VJ

