

# exploreCSR Inauguration

**Google** Research

**Ming Hsieh Institute**  
Ming Hsieh Department of Electrical and Computer Engineering



# AGENDA

- Overview
- Keynote Address
- Schedule
- Get to Know Your Peers
- Q&A



# OVERVIEW

Welcome! Here are a few key highlights of the exploreCSR 2022-23 program:

- ~6 workshops conducted over the next two and a half months
- ~2 hours per workshop
- ~4 hours of assignments after each workshop
- a capstone project to be built over two weeks
- all under the guidance of Viterbi graduate students
- and more importantly, Dr. Wing Lowe and Professor Shrikanth Narayanan

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## DR. WING LOWE

- Software Engineer at Google
- Previously, Software (Computer Vision) Development Engineer II at Amazon - Echo Look and Echo Show
- Master's Degree in Electrical, Electronics and Communications Engineering from the University of California, San Diego
- Areas of Interest: Computer Vision (Software and Hardware Development), Neural Networks, FPGAs, Computer Architecture



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# PROF. SHRIKANTH NARAYANAN

- Professor of Electrical and Computer Engineering, and Computer Science
- Professor of Linguistics, Psychology and Neuroscience
- Director of the Signal Analysis and Interpretation Lab
- Inaugural Director of the Ming Hsieh Institute
- Areas of Interest: Human-centered Signal Processing, Machine Intelligence, Inclusive Technologies





# SCHEDULE

Workshop	Time & Place	Details
Inauguration	Now!	
Introduction to Python (optional)	Fri, Feb 3rd, 11am-1pm (EEB132)	Python libraries (numpy, pandas, PyTorch tensor operations), classes and inheritance, debugging
Machine Learning Basics I	Fri, Feb 10th, 2pm-3:30pm (EEB132)	Supervised and unsupervised learning, setting up models (PyTorch, scikit-learn)
Machine Learning Basics II	Fri, Feb 24th, 11am-1pm (EEB132)	Supervised and unsupervised learning, setting up models (PyTorch, scikit-learn)

\*schedule is tentative and subject to changes

# SPECIALIZED TRACKS

In your applications, as a group you indicated that:

Your Interests

**Language**

16.7%

**Medical AI**

16.7%

**AI Art**

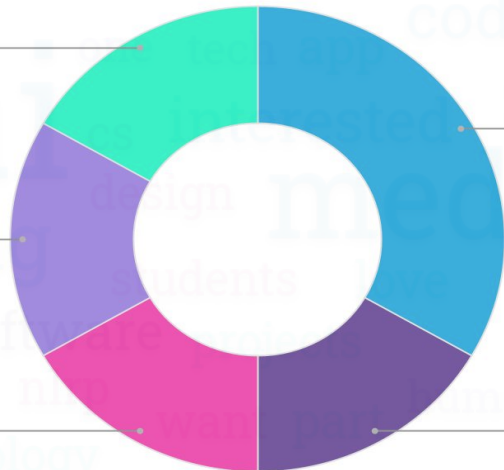
16.7%

**Computer Vision**

33.3%

**Statistics**

16.7%





## SPECIALIZED TRACKS

### Core ML

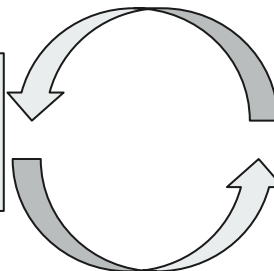
Learn how to utilize various types of data (e.g., tabular, timeseries), and sound analysis methods to derive insights from them; Apps: website UI, traffic projections, stock prediction, etc

### Computer Vision

Learn how to curate visual stimuli of your interest to automate visual tasks, e.g., robot navigation, object tracking in video, cancer detection, and manipulate them, like in image inpainting

### Language

Learn how to clean and crawl data to automate linguistic tasks, for example sentiment analysis, or fact-checking, or generate language, such as summarization, conversational agents, and poetry







# SCHEDULE

Workshop	Time	Details
Tracks Specifics I (Separate sessions per track)	Thur, Mar 9th, 11am-1.30pm	Track-specific (e.g, pre-processing of data, algorithms, pre-trained models)
Tracks Specifics II (Separate sessions per track)	Fri, Mar 24th, 11am-1.30pm	Track-specific (e.g, pre-processing of data, algorithms, pre-trained models)
Tracks Specifics III (Separate sessions per track) & <i>Project Discussion</i>	Fri, Mar 31st, 11am-1.30pm	Track-specific (e.g, pre-processing of data, algorithms, pre-trained models)
Project Presentation	Fri, Apr 14th, 11am-3pm	

\*schedule is tentative and subject to changes



## Know your ML !!

Open [slido.com](https://slido.com) on your devices and enter the following code to join as a participant:

**3588657**

or scan the QR Code on the right hand side to join.





# Story Time !!

## Rules:

- Continue the story by adding 1-2 sentences of your own. Beginning of the first sentence will be given for the first participant.
- Add twists and turns to make the story more interesting ;)
- Have lots of fun !



# Story Time !!

## Story #1

On a new-moon night, Jake is walking along the beach and suddenly you see your professor floating face down in the ocean. You start to rush over to your professor, but you remember he didn't round your grade up.



# Story Time !!

## Story #2

Once upon a time ...



# Story Time !!

## Story #3

The letter read, “Dear Alice, ...



# Story Time - A Machine Learning Demo !

Let's play the same game with  
a Machine Learning Model  
now ;)



## Human vs AI: Detect the difference !

- 87% of respondents mistook an AI-generated image for a real photo of a person.
- Only 62% of respondents interested in AI and machine learning managed to answer more than half of the questions correctly.
- Among the remaining respondents, more than 64% were wrong most of the time.

Bring out your inner detective and guess the correct answer !!!



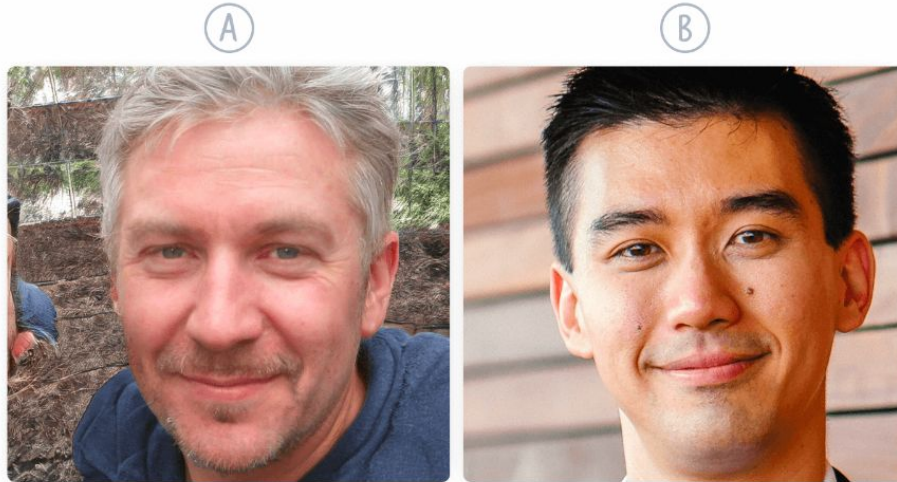


## Human vs AI: Detect the difference !



**Real Cat or  
Generated by AI ?**

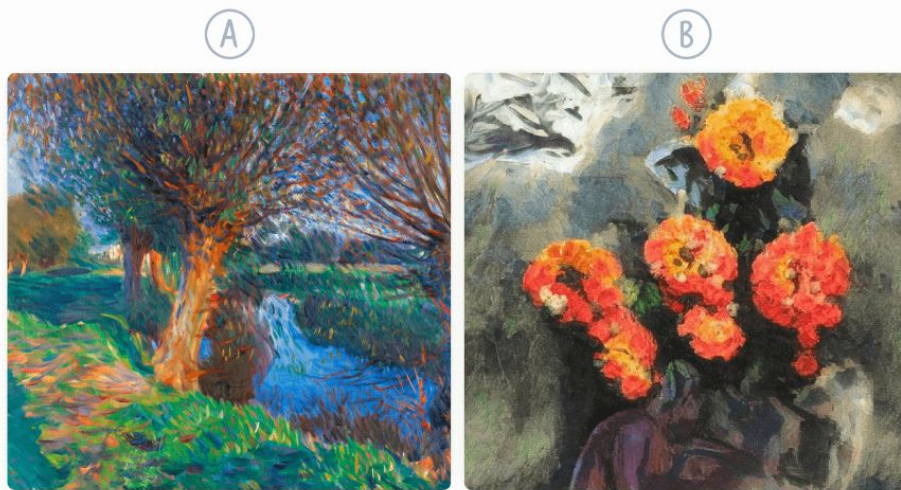
## Human vs AI: Detect the difference !



**One of them is a real photo and the other is an AI-generated image. Can you guess which is generated by AI ?**

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## Human vs AI: Detect the difference !



**One of them is a real painting and the other is an AI-art. Can you guess which is the real one ?**



# Style Transfer - Demo !

Let's do some  
mix-n-match on  
images...



## Points-of-Contact Per Track

CORE ML	COMPUTER VISION	LANGUAGE
SARTHAK MISHRA sarthakm@usc.edu	KETAKI LOLAGE klolage@usc.edu	ADITYA KOMMINENI akommine@usc.edu
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Thank You 😊