

2020.

University of Washington Computer Science Online Program 2020

398

85 /

2020 10 -11

2020 9 29

2021

➤ | Basic Information

()

() 60

()

➤ | Program Introduction

This proposal outlines the details of a 24-hour customized online instruction program in Electrical & Computer Science Engineering. Participants in this program will be introduced to current technological developments in the field of Electrical & Computer Science Engineering through four interrelated content modules. The program is designed to be delivered over approximately three weeks with group-start and end dates. During the three weeks, enrollees can go through program content and activities at times of their choice as long as they complete each module prior to the scheduled instructor Q&A time at the end of each module. It is estimated that participants will need approximately three to three and a half weeks, studying part time, to complete the program content plus complete the comprehensive final exam. This program is primarily designed for undergraduate students at Chinese universities who are selected by XIANGFEI Global Education Group. Participants who complete this specialized content program will be able to apply their learning to future studies, professional work, and personal investments.

➤ | University Introduction

✓ University of Washington

1861

"

"

1974

✓ 2019 USNews

10 2019

14

20

1

2

252

11

NASA

DOS

500

26

750

↘ | Program Key Point

- ✓
- ✓
- ✓

↘ | Program Period

	8 9	10 4			4 4	5 30
	5 31	9 29			3 30	5 20
4						3
2020						2021

↘ | Program Curriculum

- 24
- 4
- 1. Artificial Intelligence
- 2. Image Processing
- 3. Big Data
- 4. Mobile Operating Systems
- 4
- 6
- 5
- 1

↘ | Course Platform

- ✧ CANVAS
- CANVAS
- CANVAS
- CANVAS
- ✧ ZOOM
- ZOOM



| Study Plan

3

1	DAY 1	5	2	Artificial Intelligence
	DAY 2		2	
	DAY 3		1	
	DAY 4	1		
	DAY 5			
	DAY 6	5	2	Image Processing
	DAY 7		2	
DAY 8	1			
2	DAY 9	1	1	
	DAY 10			
	DAY 11	5	2	Big Data
	DAY 12		2	
	DAY 13		1	
	DAY 14	1	1	
3	DAY 15			
	DAY 16	5	2	Mobile Operating Systems
	DAY 17		2	
	DAY 18		1	
	DAY 19	1	1	
	DAY 20			
DAY 21				
4	DAY 22			
20	4	6		

5

3



| Program Resources



ID

ID



| Program Achievements



Official Record: [REDACTED]

[REDACTED]
1201 NE CAMPUS PRWY
SEATTLE WA 98105

ECELECT: Electrical and Computer Engineering Lecture Series (Status: Active)						
Term	Start	End	Course	Grade Units/Type	Clock Hrs.	Contact Hrs.
Summer 2019	07/29/2019	08/16/2019	PRES N125 B: Presentation Skills	3.7 1.50 CEUNUM		15
Summer 2019	07/29/2019	08/16/2019	ECELECT N300 A: Electrical and Computer Engineering Lecture Series	4.0 6.00 CEUNUM		60

Contact Hour: One hour (50 minutes) of scheduled instruction
 CEU: Ten contact hours of successfully completed course work that meets continuing education standards
 Clock Hour: One contact hour of instruction in a course offered by an approved Professional Educator Standards Board
 "SC" Grade: Successful completion of course work
 "UC" Grade: Unsuccessful completion of course work



✓



| Program Fee

()

398

()



| Program Requirement

()

18

()

()

76

6.0/CET6 500/CET4 550



| Material List

()

()



| Participation Process

()

()

()



| Sign Up

- <http://apply.xf-world.org/>
- bjdq@xf-world.org
- 13681049711
- QQ 1491678764

1. What is AI

- What is AI? History of AI
- Turing Test
- The difference between Machine Learning, Deep Learning and Artificial Intelligence.

2. Artificial Neural Network

- What is ANN? History of ANN. Basic ANN Algorithm (Perceptron)
- Multi-layered ANN

3. AI in Deterministic Environment

- A* Search Algorithm A*

4. AI Team Activity – Maze Solver & AI Creativity

- Maze Solver The missionaries and cannibals are at the (0,0) point on a 2D map and trying to get to point (7,7). But there are some barriers on the map that they want to avoid running into. Please, help them figure out the shortest path by doing A* Search Algorithm. A*

0,0 7,7

- Can Artificial Intelligence be creative?

5. Markov Decision Process

- Markov Decision/Reward Process /

Module 2 2 Intro to Image Processing

Image processing has attracted considerable attention as an important component of a wide range of applications including robots, self-driving cars, virtual reality games, and surgical navigation systems.

The module introduces you to the theory of image formation and commonly used image processing methods. We will also explore the recent progress in image processing achieved using deep learning algorithms.

The students will work in groups on two activity projects of common image processing techniques.

Learning Outcomes

- ✓ Describe the connections and differences between image processing and computer vision;

- ✓ Explain commonly used methods for some image processing tasks;

- ✓ Implement appropriate methods using OpenCV library in Python to achieve the desired image processing goals; Python OpenCV

- ✓ Identify key applications and current progress of image processing.

1. Introduction of Image Processing

Module 3 3 Intro to Big Data

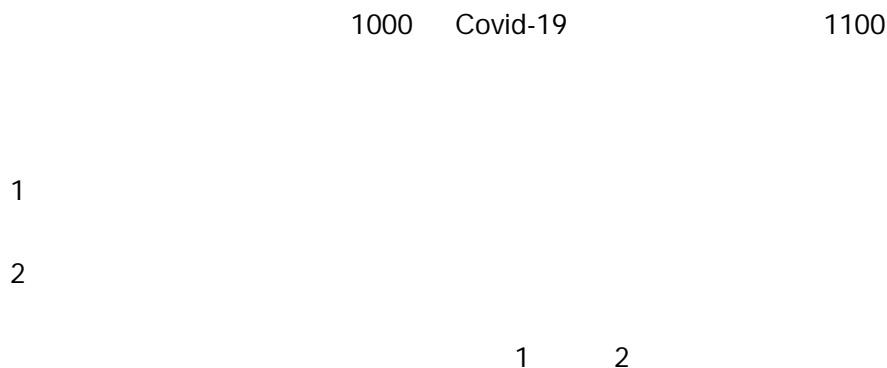
In big data, we need to find a pattern. Is a company earning more money? Is the test drug really effective?

To find a pattern, we must distinguish between randomness (often called noise) and signal.

For example, the state of Washington reports 1,000 cases of Covid-19 one week. The next week it reports 1,100. Why did the cases increase? There are two reasons:

1. The change is because of randomness (e.g. the doctors were slow to report cases or more people decided to get tests, etc.)
2. The change shows a true increase in infections.

This module will give us a mathematical way to distinguish (1) from (2). Is the change real?



Learning Outcomes

- ✓ Establish a null hypothesis
- ✓ Determine a p value P
- ✓ Do basic linear regression
- ✓ Fit an exponential curve
- ✓ Resample data

1. Resampling

- Intro to Bootstrapping, or Resampling
- Population vs Samples
- Null hypothesis, and p value P

2. Linear Regression

3. Curve Fitting

4. P value explanation P

Module 4 4 Intro to Mobile Apps

Mobile devices have become increasingly powerful and essential for everyday activities, bringing advanced computing services to everyone.

This module introduces you to mobile application development. Designing applications for mobile devices is particularly challenging due to screen size, portability, and wide variation in hardware capabilities. This module will present the key mobile-application design challenges, architectural patterns, and current technologies.

We will also explore how mobile operating systems enable exciting new capabilities for augmented reality and artificial intelligence services.

Learning Outcomes

- ✓ Identify core design considerations for mobile applications
- ✓ Describe key differences between iOS and Android systems iOS Android
- ✓ Describe the different mobile-application development models and tradeoffs of each approach
- ✓ Explain core concepts of augmented reality
- ✓ Explain key uses of machine learning in mobile applications

1. Team Activity - App Design

2. Intro to Mobile Applications

- Native -v- hybrid mobile development Native Hybrid
 - ✧ Hybrid Apps v/s Native Apps Native Hybrid
 - ✧ Practice Kotlin Kotlin
 - ✧ Practice Swift Swift

3. UI Design

- Guide to Mobile Design

4. Architecture

5. Advanced features

- Augmented Reality