

2022 东南大学计算机科学与工程学院

第二届国际暑期学校项目总结报告

Final Report of SEU CSE International Summer School Program

项目主题 Theme

AI

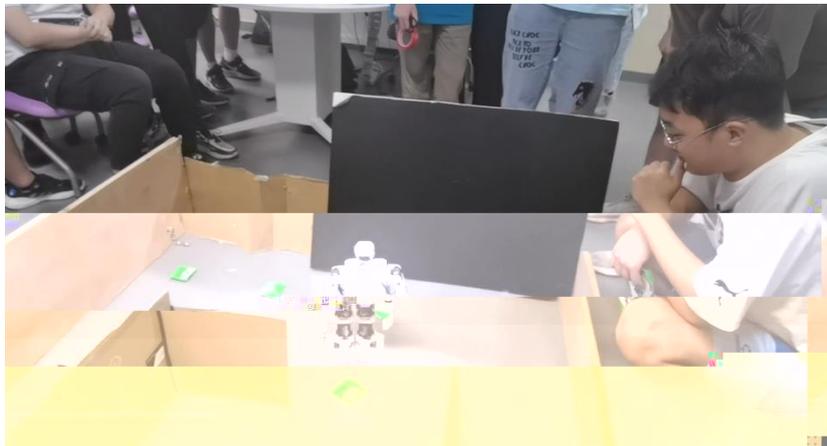
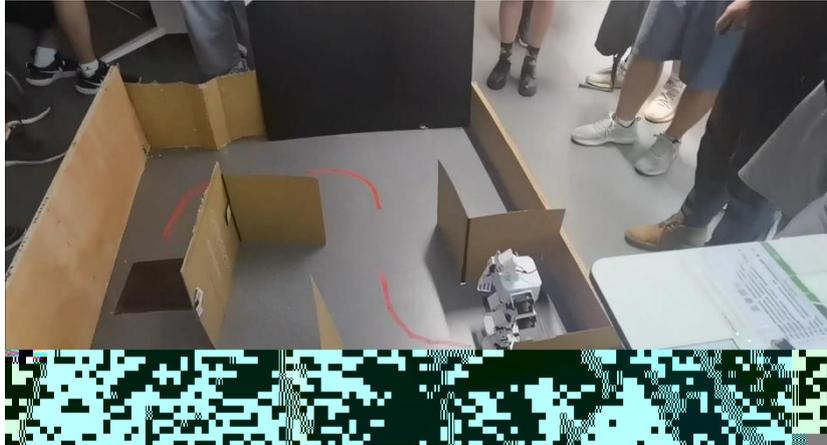
Experiencing Frontier Technologies of Artificial Intelligence

1) ()

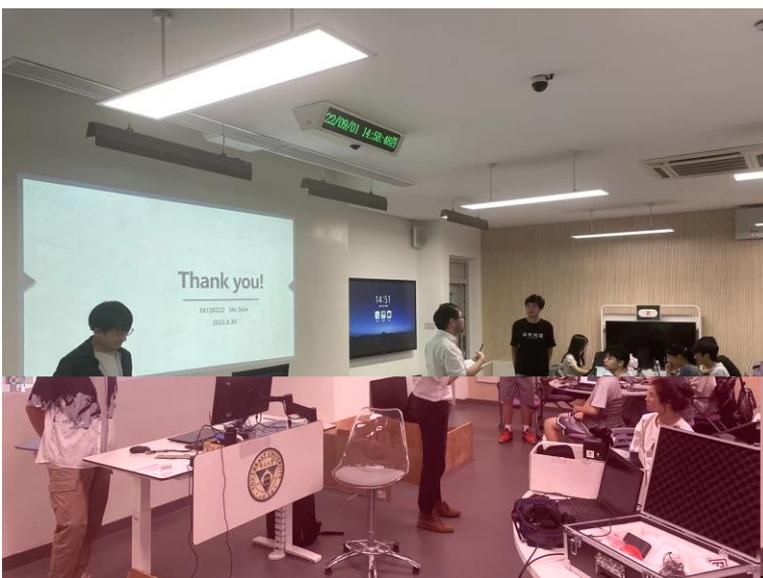
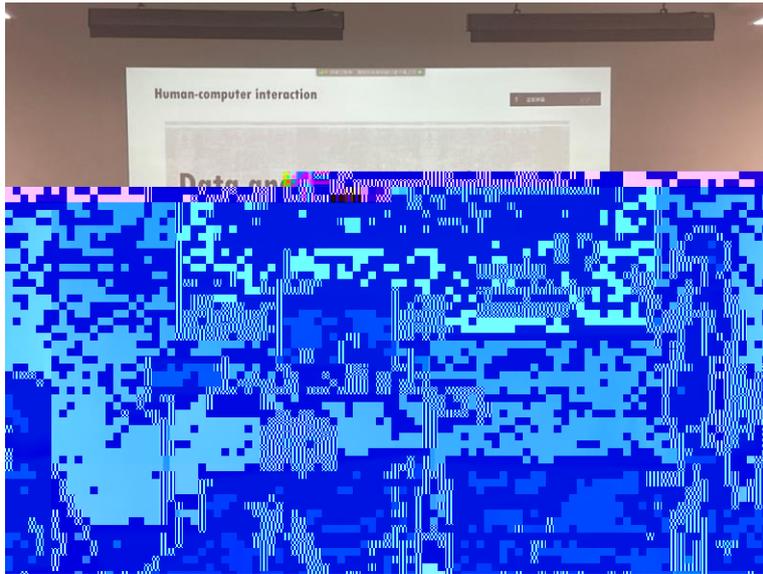
Ujwal Gadiraju

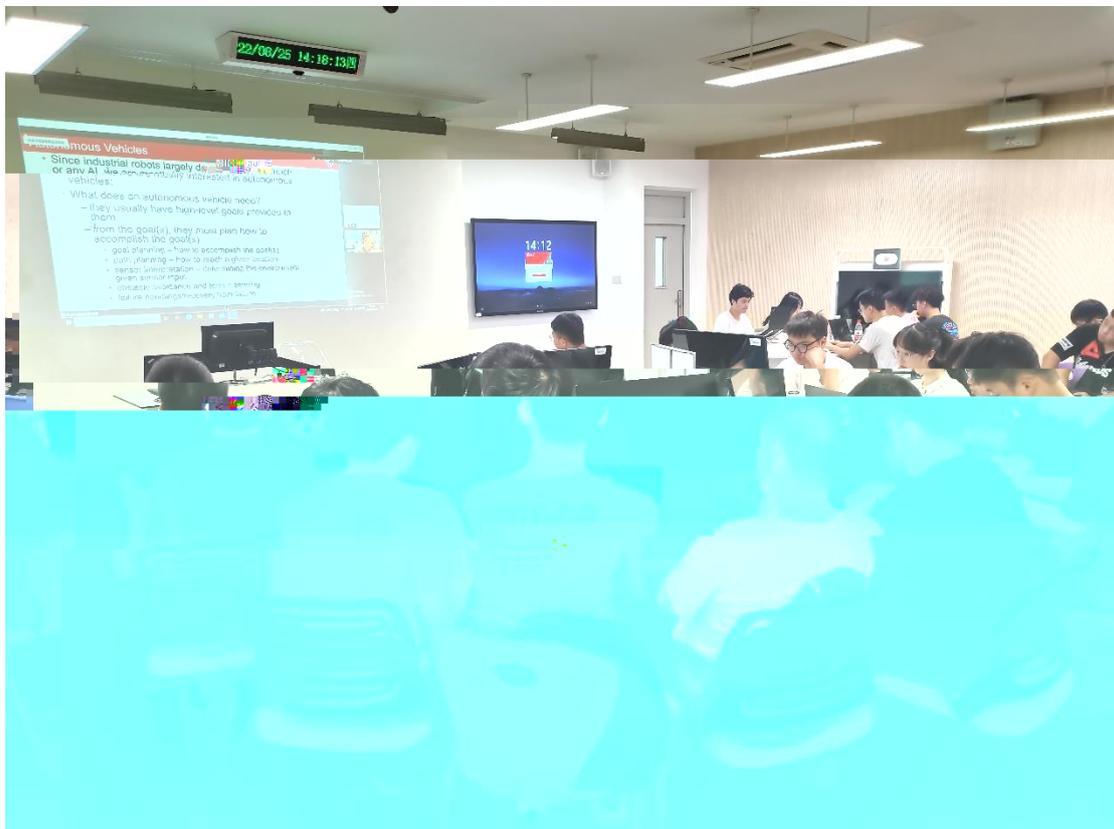
1.

2.





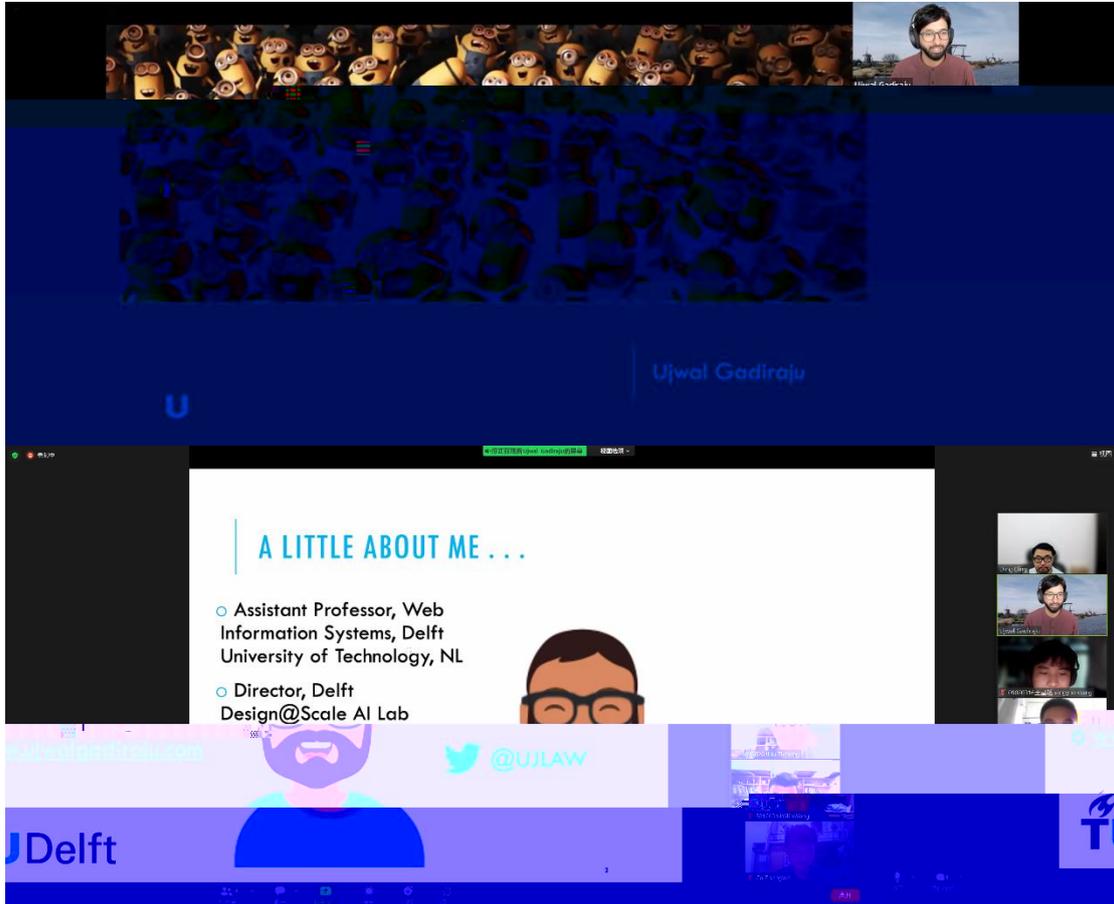




Ujwal Gadiraju

--

--



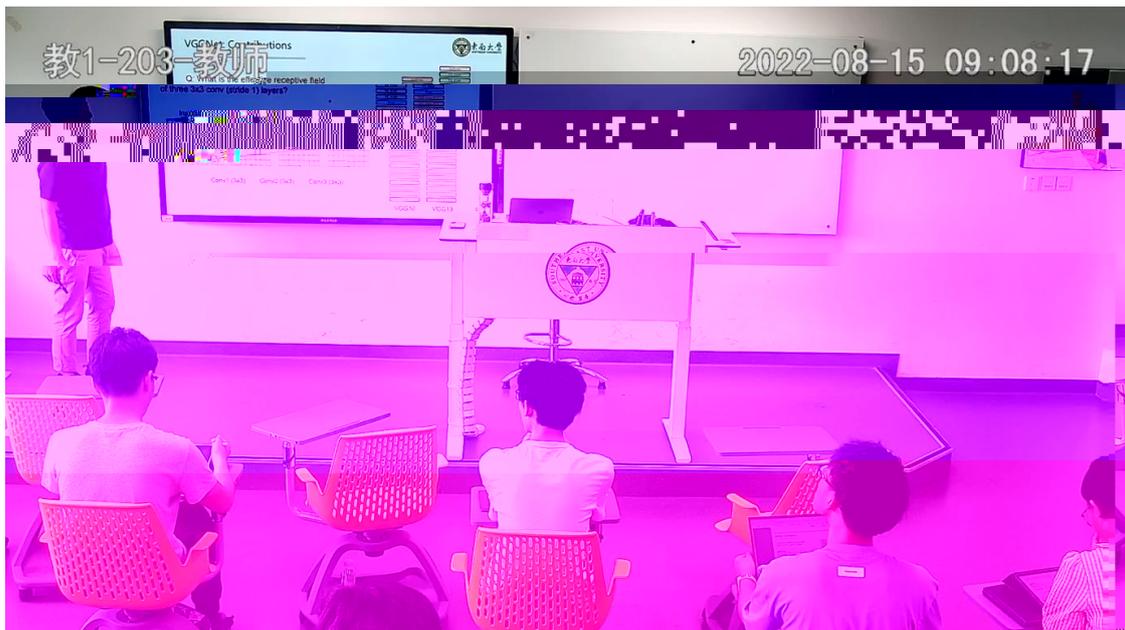
Ujwal Gadiraju

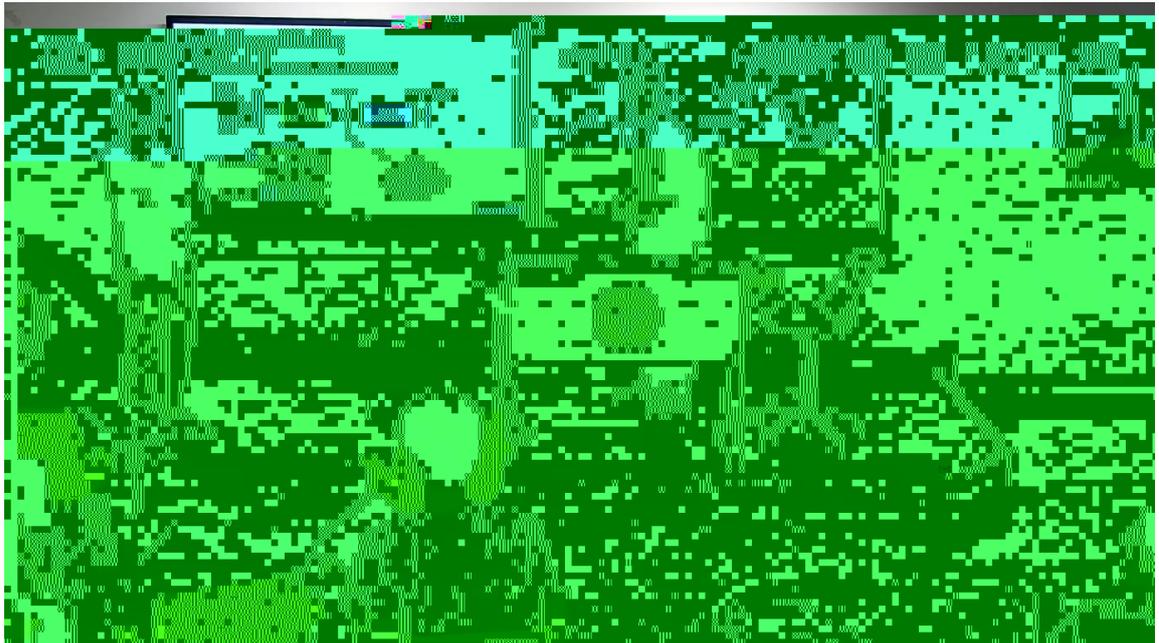
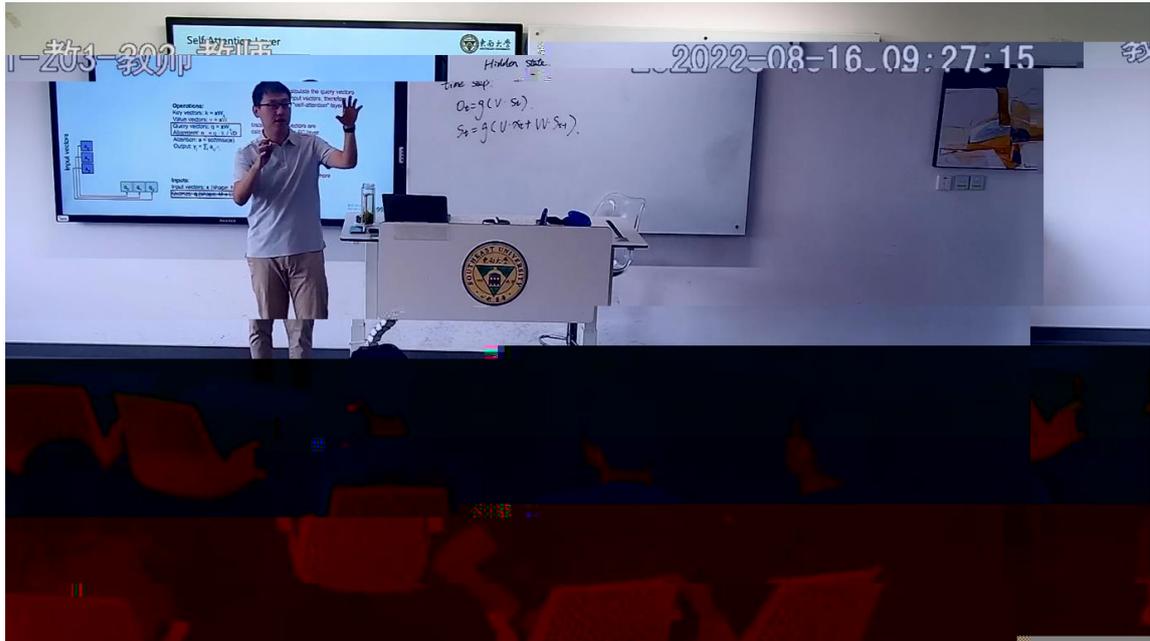
2)

()

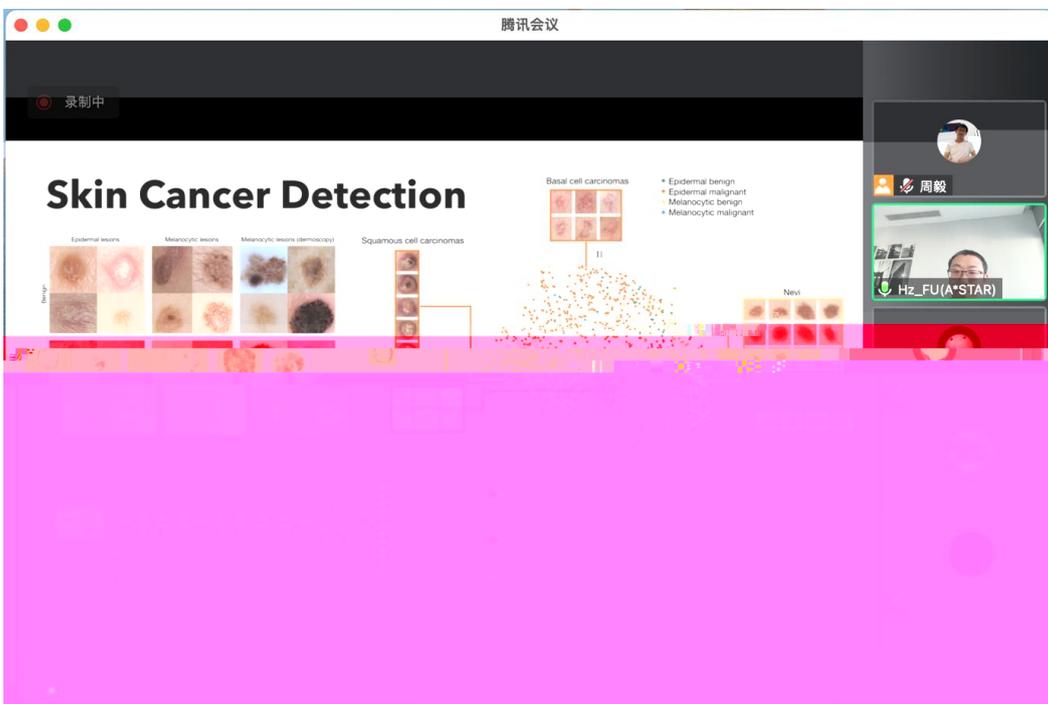
A*STAR

Transformer





CT



腾讯会议

录制中

Unsupervised Retrieval

- Pseudo labelling
 - CIMON: Towards High-quality Hash Codes

(a) Generation of Semantic Information (b) Consistency Learning

Dr. Yuming Shen 的屏幕共享

腾讯会议

录制中

MATRIX FACTORIZATION

Mean Squared Error

0.7	0	0	1.1	0
0	0	0.5	0	0.4
0.5	0	0	0.7	0

	0	0	0.6	0	0.5
User 1	1	0	0	1	0
User 2	0	0	0	0	1
User 3	0	0	0	1	0
User 4	0	0	1	0	0

Utility Matrix User Matrix Item Matrix

Multiplication

0	1.3			
-0.6	0			
0	0.9			
-0.8	0			

0	0	-0.8	0	-0.6
0.5	0	0	0.8	0

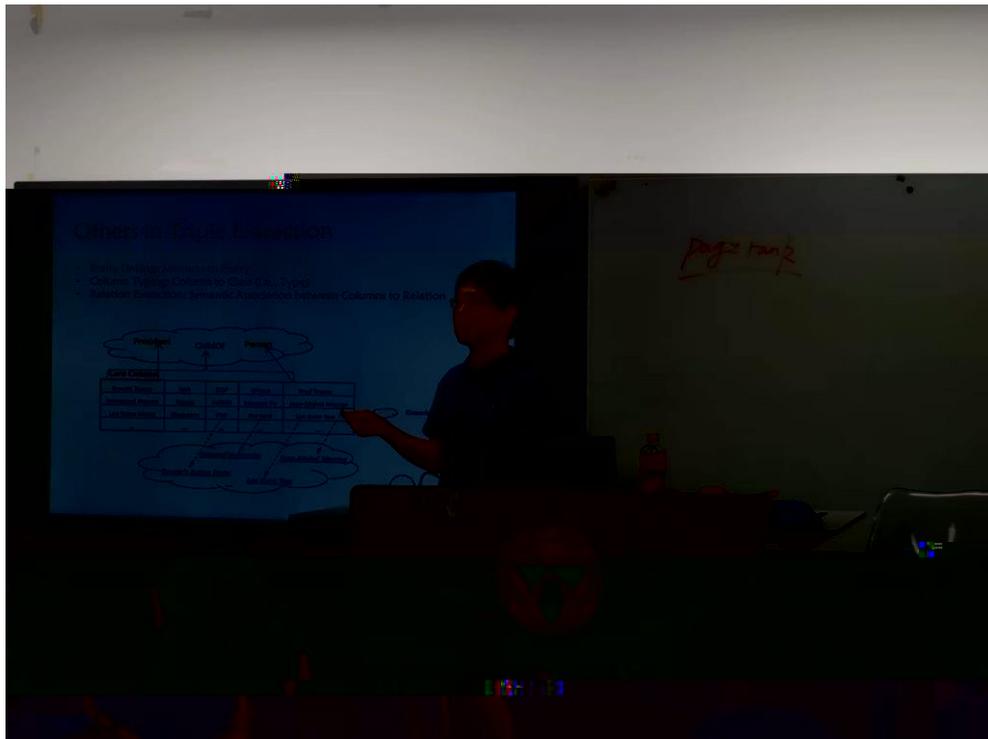
Yuming Shen 的屏幕共享

3)

Guohui Xiao

Jiaoyan Chen





Guohui Xiao

SPARQL

SPARQL

Example VALUES

ex:Book1	ex:title	"SPARQL Tutorial".
ex:Book2	ex:title	"Cse100b".

```

SELECT ?title WHERE {
  ?b ex:title ?title
  VALUES ?b { ex:Book1 }

```

query

Result

```

?title → "SPARQL Tutorial"

```

The screenshot shows a SPARQL query interface. At the top, there is a header with "SPARQL" and "Data". Below this, the word "Example" is displayed in blue. The query input field contains the text "dbpedia:Mount_Bat". The results area is currently empty. In the top right corner, there is a video call window showing a participant named "吴天星SEU".

Guohui Xiao

Jiaoyan Chen

RDFS OWL

The slide is titled "Classes in RDFS". It contains the following content:

- Assume we have the following hierarchical classes (taxonomy) defined:
E.g.,

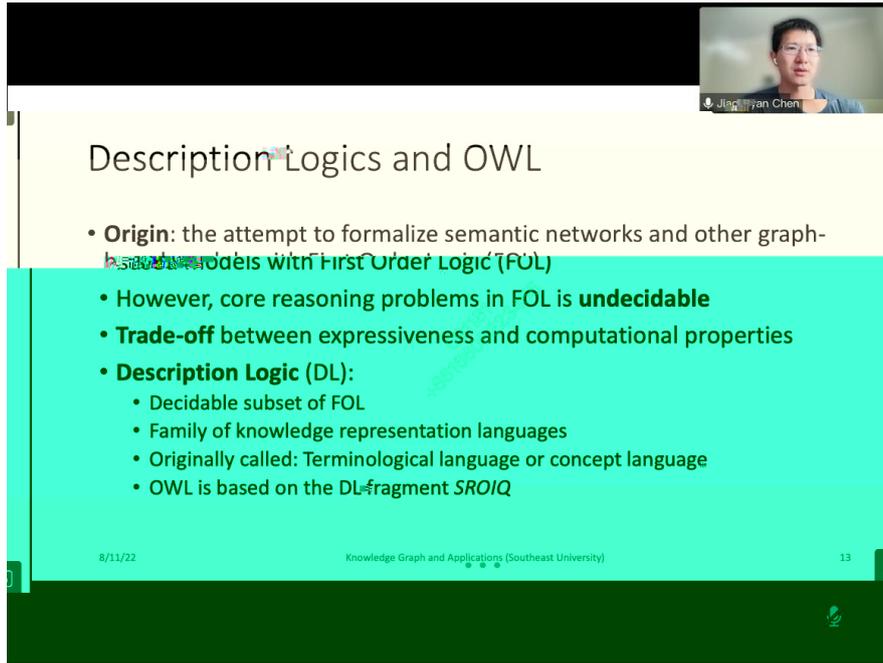

```

ex:Textbook rdfs:subClassOf ex:Book .
ex:Book    rdfs:subClassOf ex:PrintMedium .
ex:Journal rdfs:subClassOf ex:PrintMedium .

```
- RDFS semantics:
 - The `rdfs:subClassOf` property is **transitive**
 - E.g., it follows from the above that
`ex:Textbook rdfs:subClassOf ex:PrintMedium .` Also known as **inheritance reasoning**

If `ex:Database rdf:type ex:Textbook`, then `ex:Database rdf:type ex:PrintMedium`

At the bottom of the slide, there is a footer with the date "8/11/22", the text "Knowledge Graph and Applications (Southeast University)", and the page number "8".



Jiaoyan Chen

Description Logics and OWL

- **Origin:** the attempt to formalize semantic networks and other graph-based models with First Order Logic (FOL)
- However, core reasoning problems in FOL is **undecidable**
- **Trade-off** between expressiveness and computational properties
- **Description Logic (DL):**
 - Decidable subset of FOL
 - Family of knowledge representation languages
 - Originally called: Terminological language or concept language
 - OWL is based on the DL fragment *SROIQ*

8/11/22

Knowledge Graph and Applications (Southeast University)

13

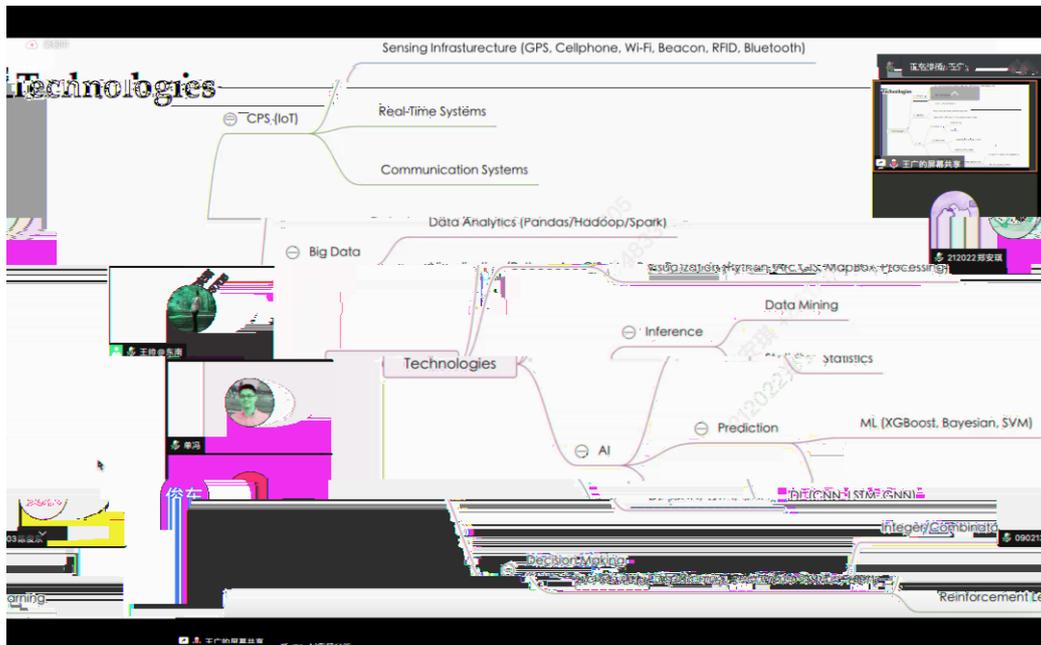
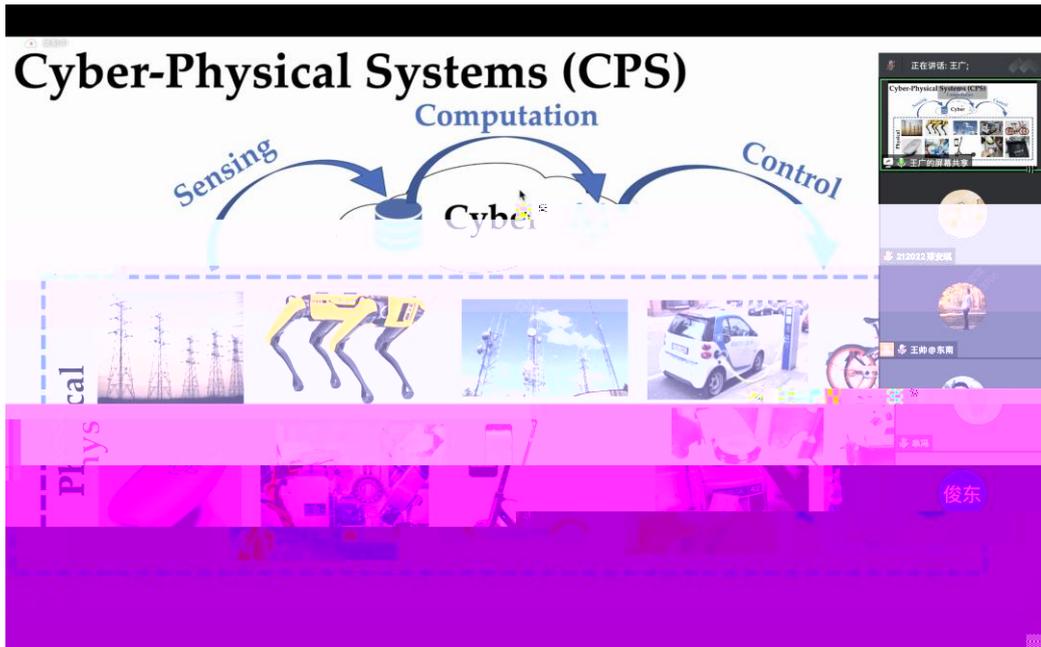
Jiaoyan Chen

4)

PPT

GIT Latex





1

2