# Topics in Computer Architecture and Operating Systems

### Tue,Fri 3.30PM - 5PM @ KD 101

# Course and instructors

$whereis cs698e

https://www.cse.iitk.ac.in/users/biswap/CS698E.html

Piazza forum: https://piazza.com/iitk.ac.in/secondsemester2017/cs698e

$whereis biswa

KD 203, biswap@cse.iitk.ac.in, Extn: 6896

$whereis deba
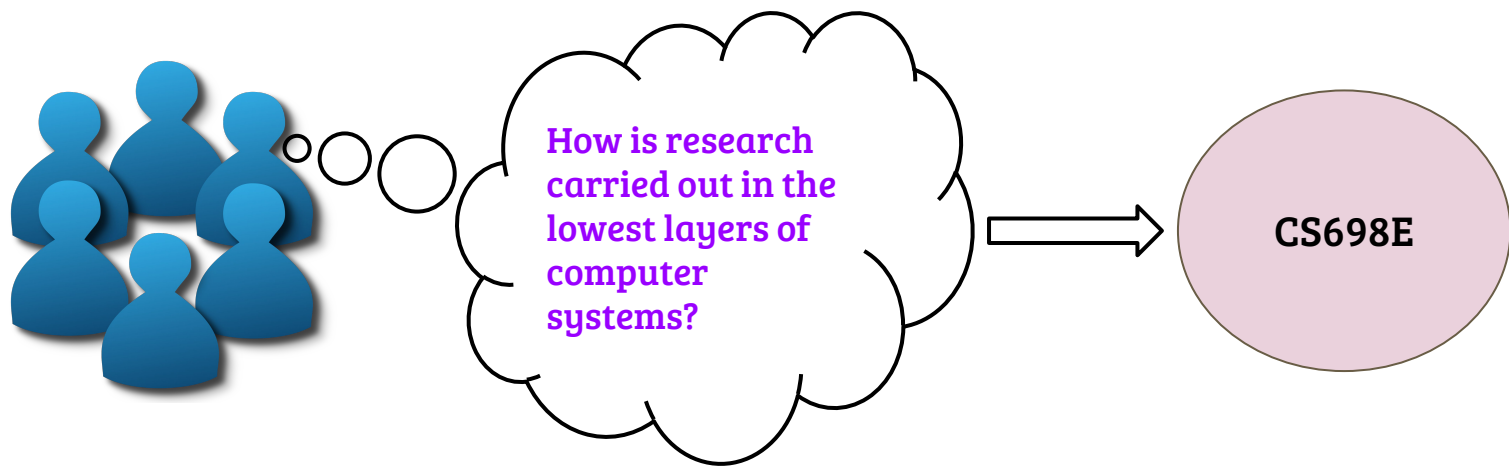
KD 212, deba@cse.iitk.ac.in, Extn: 2004

# Evaluation

1. Research Project (50%)
2. Research paper review (20%)
3. Lead research discussion (20%)
4. Class + Piazza participation  (10%)

**References** :    List of papers are added in the course page

# Course objectives

How is research carried out in the lowest layers of computer systems?

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➔ Explore best research practices in architecture and OS research

◆ Idea and innovation

◆ Tools, benchmarks

◆ Presentation

# Course objectives

Research problems spanning across architecture and OS domains
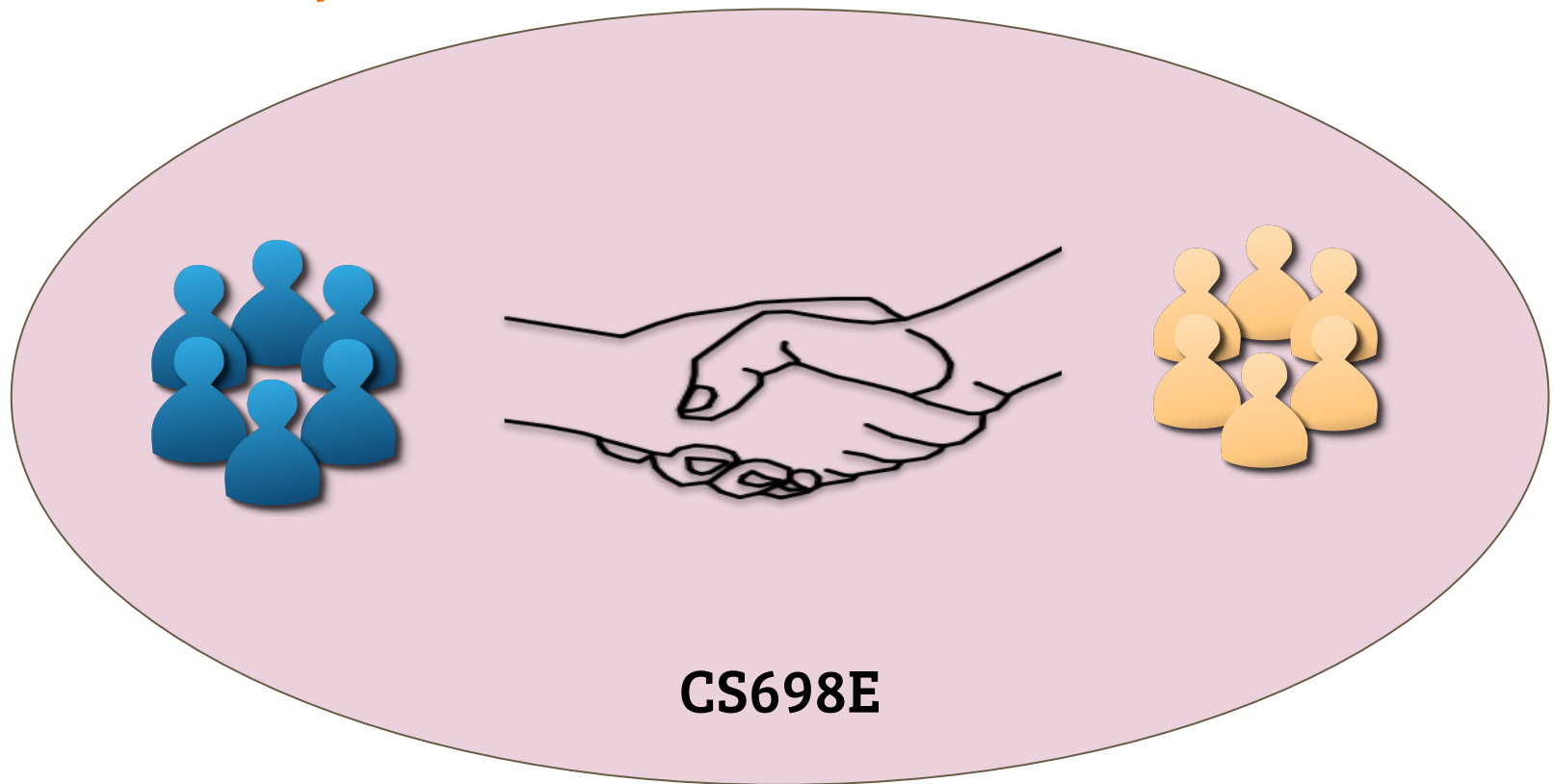
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➔ Understand architecture interfaces for OS

◆ Architecture extensions

◆ Improved OS functionalities

# Why arch-os?



➔ Research and innovation barriers

◆ Understanding

◆ Tools, techniques

◆ Subtle issues/challenges on either side

# Course objectives



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# Course components

Research paper review

Research paper presentation

Research project

# Research paper review

➔ At most one research paper every week
➔ Individual review submission
➔ Review submission mandatory before the class on Tuesday
➔ More on how to review a paper a little latter

# Course components

Research paper review

Research paper presentation

Research project

# Research paper presentation

➔ One person from CS698E will lead the discussion for a paper
- ◆ Applicable to deba and biswa :-)
- ◆ A short presentation (30 mins)
- ◆ In-depth discussion, question answers and brainstorming

➔ Recognition for surfacing hidden issues, assumptions and extensions

➔ Negative marking for silence!

# Course components

Research paper review

Research paper presentation

Research project

# Research project

➜     Group of maximum two students

➜     Initial project ideas

1. Comprehensive implementation and evaluation of virtual memory subsystem in ChampSim
2. Design and implementation of asynchronous copy-on-write (CoW)
3. Invalid/Dirty bit support for TLBs

# Honor Code

"Take pride in honest hard work "

"Cheating implies accepting defeat"

"If you are here to learn, never defeat the purpose by cheating"

https://www.cse.iitk.ac.in/pages/AntiCheatingPolicy.html