

# Computer Graphics: Rendering

Autumn 2023

Lecture 1: Introduction and Course Organisation

Kartic Subr

# Me: A brief history



Univ. of  
Edinburgh

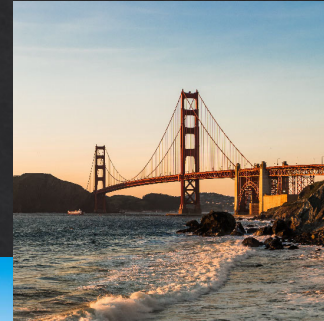
2016



Heriot Watt  
Univ.



Univ. College  
London



INRIA-Grenoble



Univ. of California  
Irvine



Bangalore Univ.



2001



## Special Effects

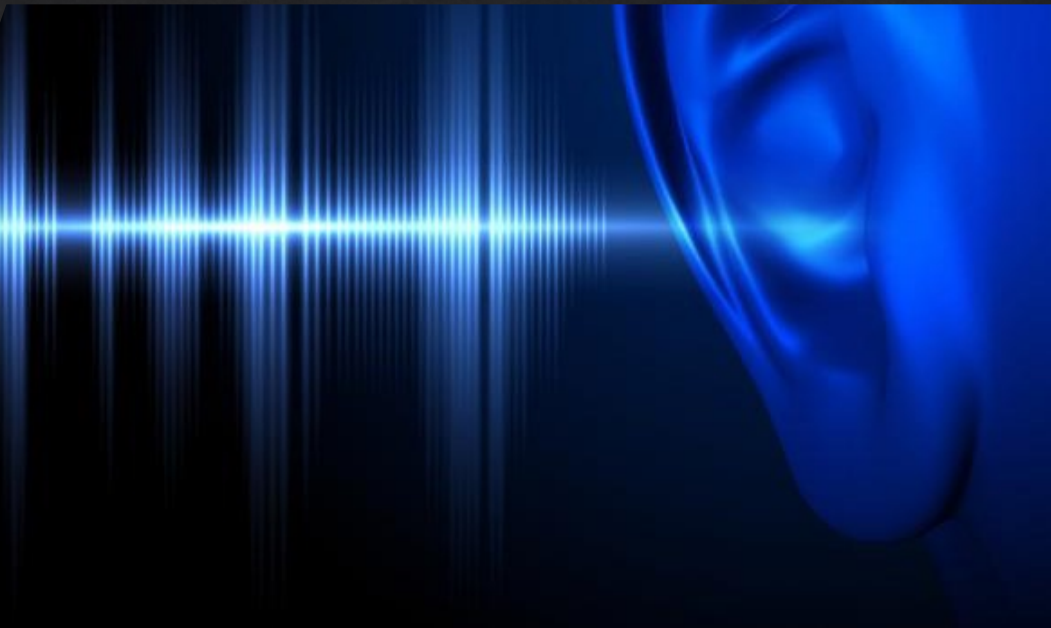


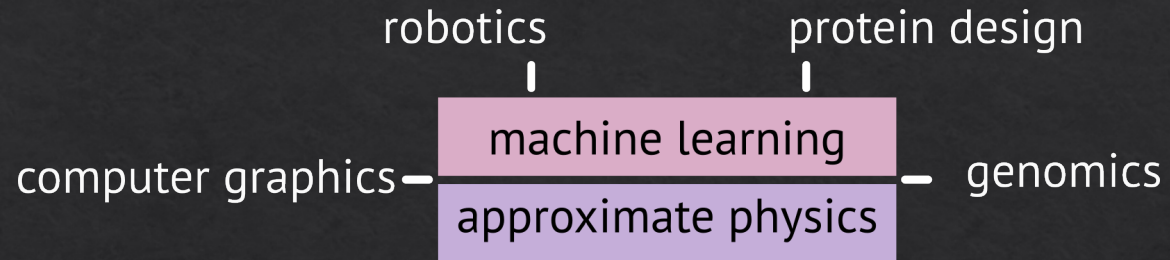
Important Looking Pirates VFX

## Video Games (real-time)



Google Stadia tech demo 2019

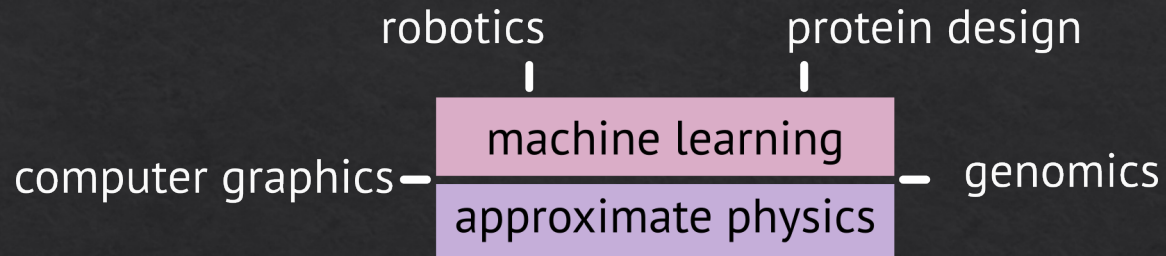
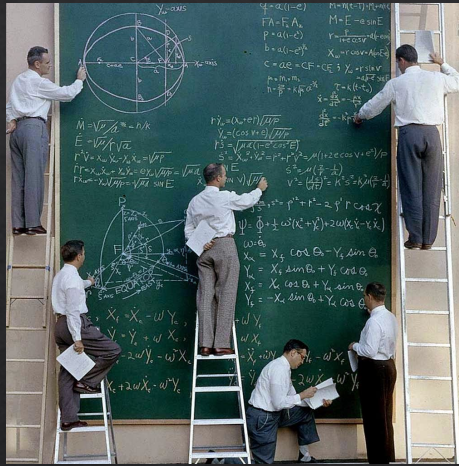




# #TAG

Timely Approximations Group





# #TAG

Timely Approximations Group

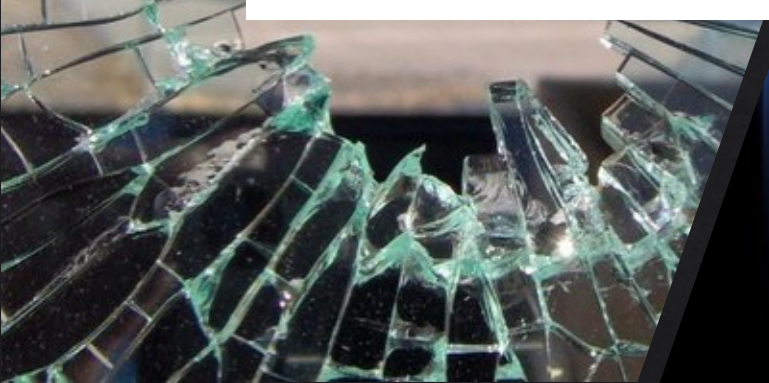


100 MILLION  
1 MILLION 60000 LIM(X) → ∞ 5MILLIONS  
LOTS 500000 4000 300 000 25000 40 000 5 000 000  
00 000  
LION **AT LEAST** 10 5 >0 3 A LOT YES 500 00+  
00 100000 1000000 5000 2 MILLION 500 000  
1000S 5 MILLION 100 000 1000 20000 50-100K  
MILLIONS 180000 50000 2 MIL 70%  
10 000

→

- 1 Go to [wooclap.com](http://wooclap.com)
- 2 Enter the event code in the top banner

Event code  
**PORUFD**



# CG is central to the creative industries

## The UK Creative Economy 2018

### JOBS

The Creative Economy 2018

**3.2** MILLION JOBS

**1** IN **11**

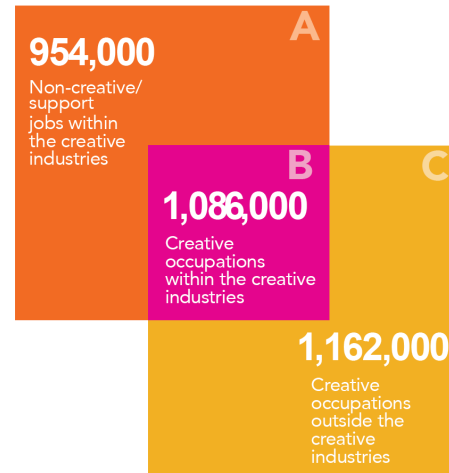
UK JOBS

**81k**

CREATIVE ECONOMY JOBS ADDED IN 2018

### EMPLOYMENT

Employment in the UK creative economy 2018



Total **3.2m** jobs in the UK creative economy

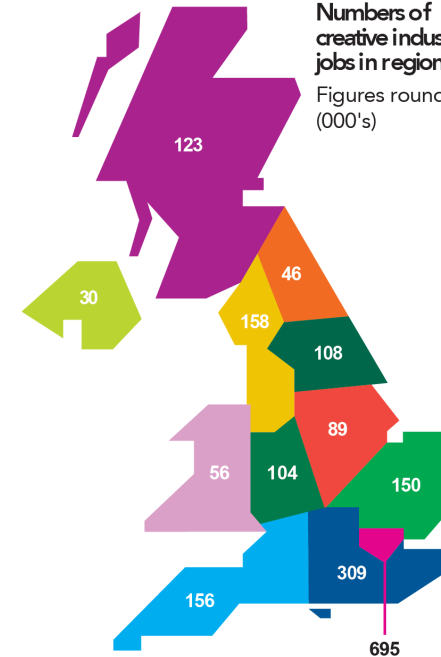
creative economy = **A+B+C**

creative industries = **A+B**

### REGIONS

Numbers of creative industries jobs in region 2018

Figures rounded to (000's)

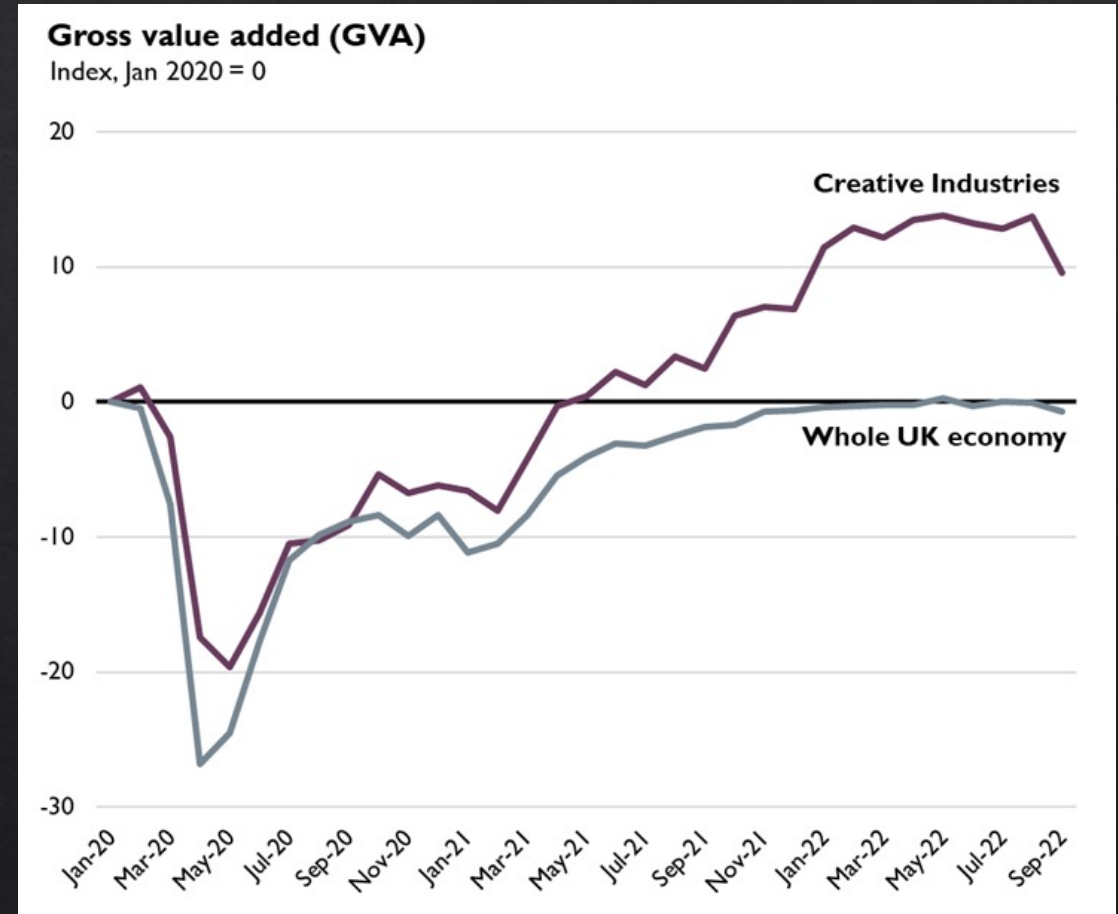
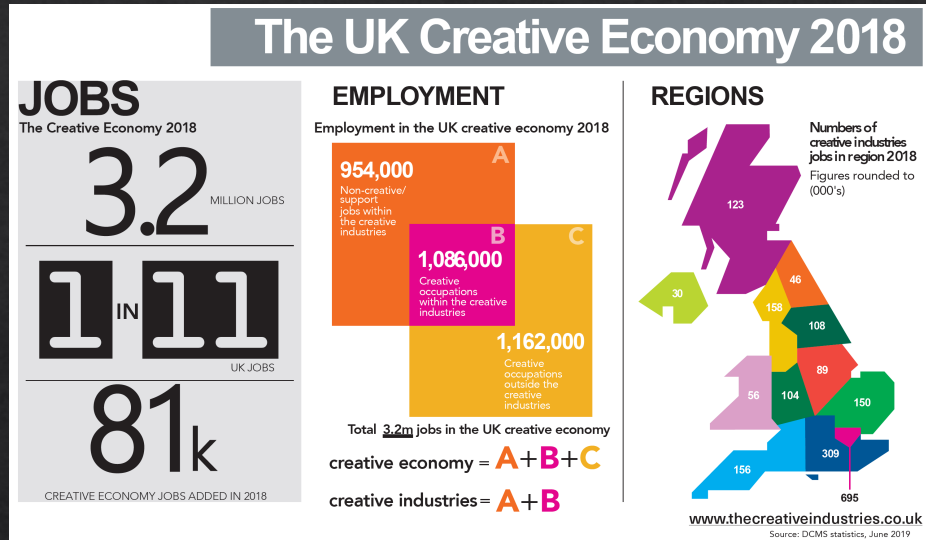


[www.thecreativeindustries.co.uk](http://www.thecreativeindustries.co.uk)

Source: DCMS statistics, June 2019

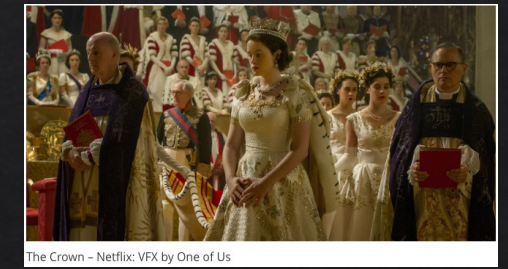
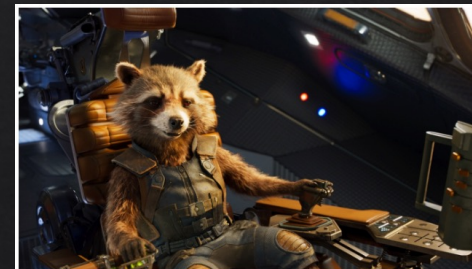
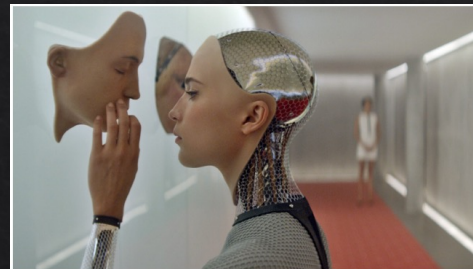
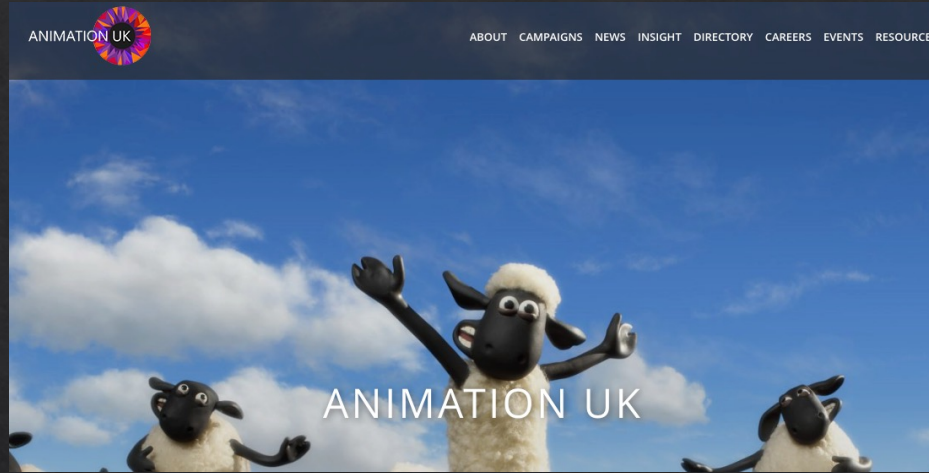


# CG is central to the creative industries



<https://lordslibrary.parliament.uk/arts-and-creative-industries-the-case-for-a-strategy/>

# It's all happening here in the UK!



# Simulating photorealistic pictures?

photograph



Colourbox.com

manually painted



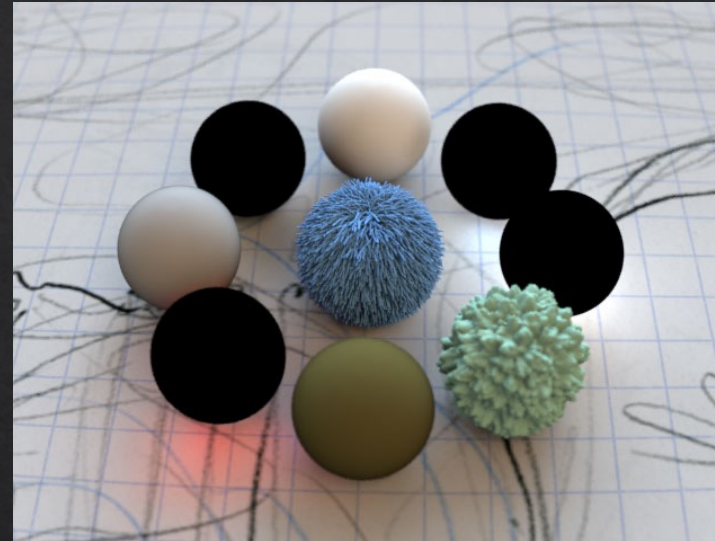
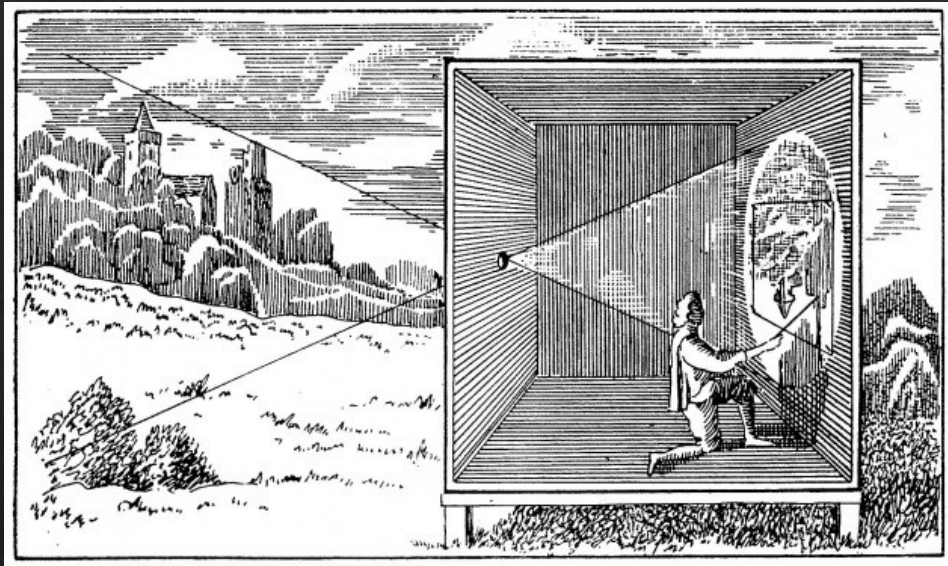
Pedro  
Campos

computer generated



# Physically based simulation, at its core!

## Projective geometry



Energy  
(light transport)



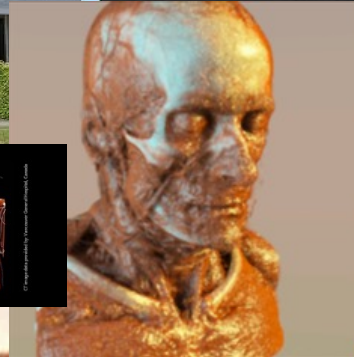
Advertising



Engineering



Medicine



Defense



Entertainment



# Simulate the physics of light



lenses



defocus



exposure time

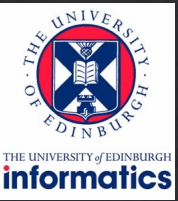


materials



light, media

# About the course ...



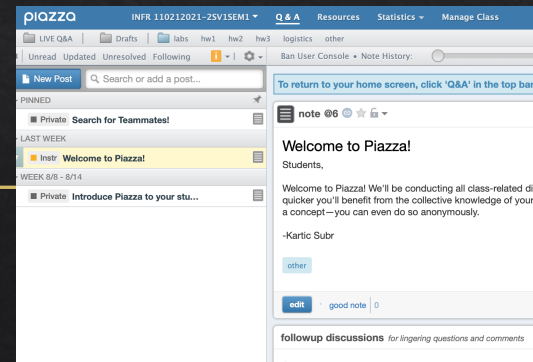
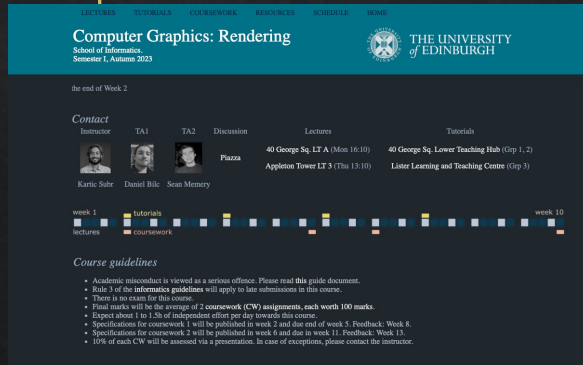
- coursework only (no exam)
- 2 coursework assignments: C1, C2
  - Final mark =  $C1 + C2$
- class split into 3 groups (for tutorials)
  - Tutorials provide guidance towards CW
- GPT!! Get your free account today...

# Logistics



- CW1: Daniel Bilc
- CW2: Sean Memery

?

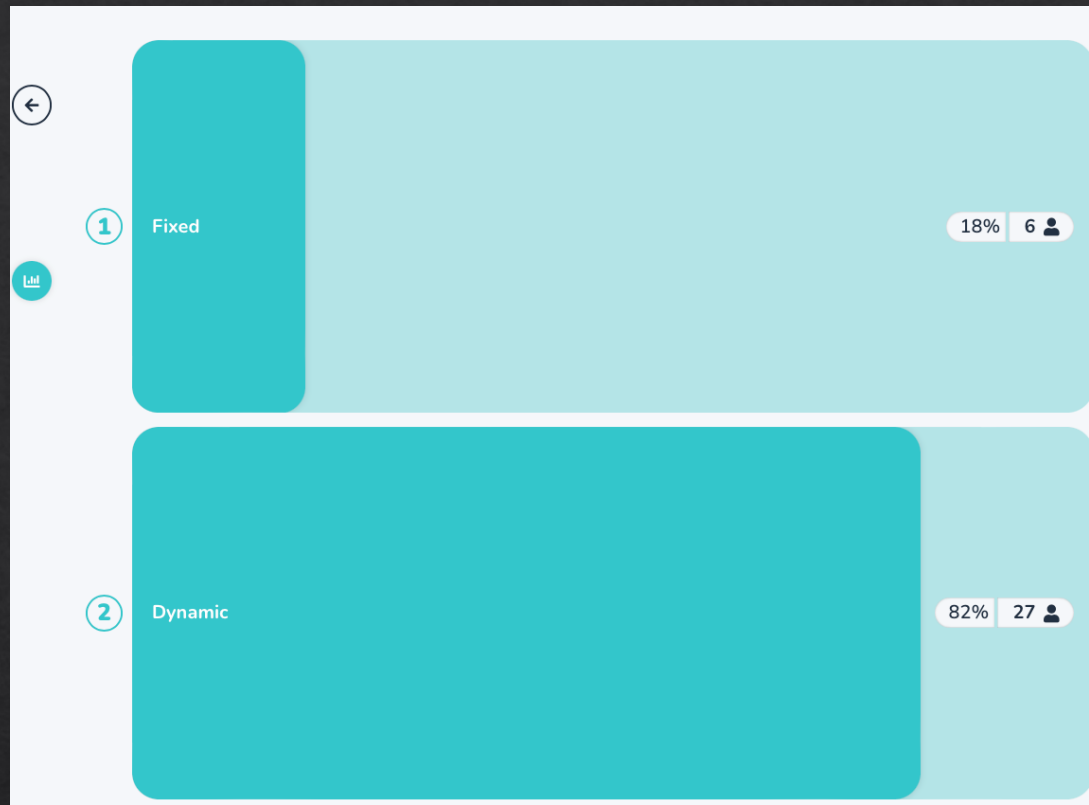
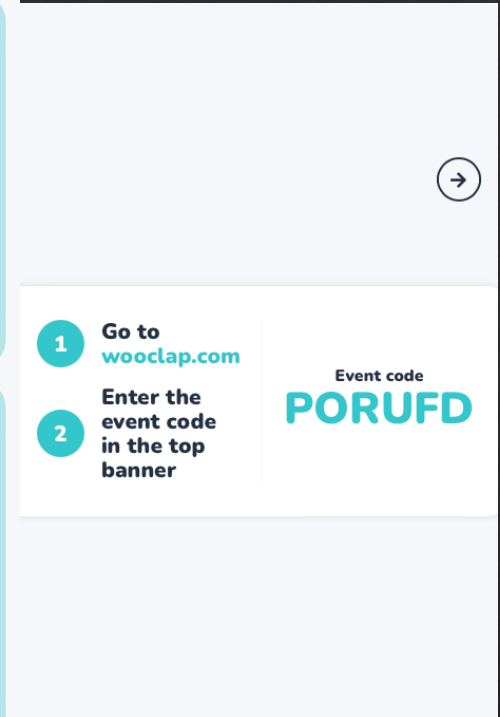


Course website

<https://ksubr.github.io/CGR2023/>

piazza

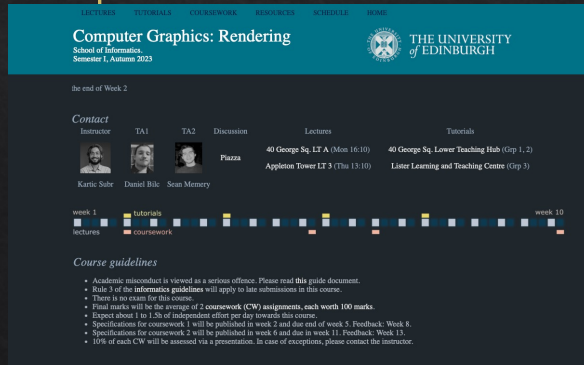


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Event code **PORUFD**



Computer Graphics: Rendering  
School of Informatics  
Semester 1, Autumn 2023

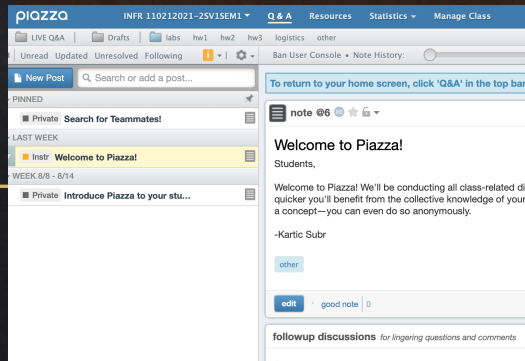
the end of Week 2

Contact  
Instructor: Kartic Subr  
TA1: David Birk  
TA2: Sean Memory  
Plazza

40 George Sq, LT A (Mon 16:10)  
40 George Sq, Lower Teaching Hub (Gip 1, 2)  
Apollon Tower LT 3 (Thu 13:10)  
Lister Learning and Teaching Centre (Gip 3)

Course guidelines

- Academic misconduct is viewed as a serious offence. Please read this guide document.
- Rule 3 of the informatics guidelines will apply to late submissions in this course.
- There is no exam for this course.
- Final marks will be the average of 2 coursework (CW) assignments, each worth 100 marks.
- Expos should be 1 to 1.5h of independent effort per day towards this course.
- Specifications for coursework 1 will be published in week 2 and due end of week 5. Feedback: Week 8.
- Specifications for coursework 2 will be published in week 6 and due in week 11. Feedback: Week 13.
- 30% of each CW will be assessed via a presentation. In case of exceptions, please contact the instructor.



PIAZZA INFR 110212021-25V15EM1

Unread Updated Unresolved Following

New Post Search or add a post...

Private Search for Teammates!

LAST WEEK

WEEK 8/8 - 8/14

Private Introduce Piazza to your stu...

Welcome to Piazza!  
Students,  
Welcome to Piazza! We'll be conducting all class-related discussions. The quicker you'll benefit from the collective knowledge of your class, the better. You can even do so anonymously.

-Kartic Subr

edit · good note 0

followup discussions for lingering questions and comments



## Course website

<https://ksubr.github.io/CGR2023/>

## piazza

# CGR

- Theory (28h)
  - 16h lectures
  - 12h reading
- Practice (70h)
  - 4h tutorials
  - 6h creative thinking
  - 30h CW1
  - 30h CW2

# Main feedback/criticism previous offering

- CW1 worth too much credit
- CW2: basic ray tracing took too long
- CW2 timing not ideal (other coursework)
- More detailed lecture on coordinate transforms

# Comments ...

*Reflecting on your experience of hybrid teaching and learning on this course, what has worked well for you?*

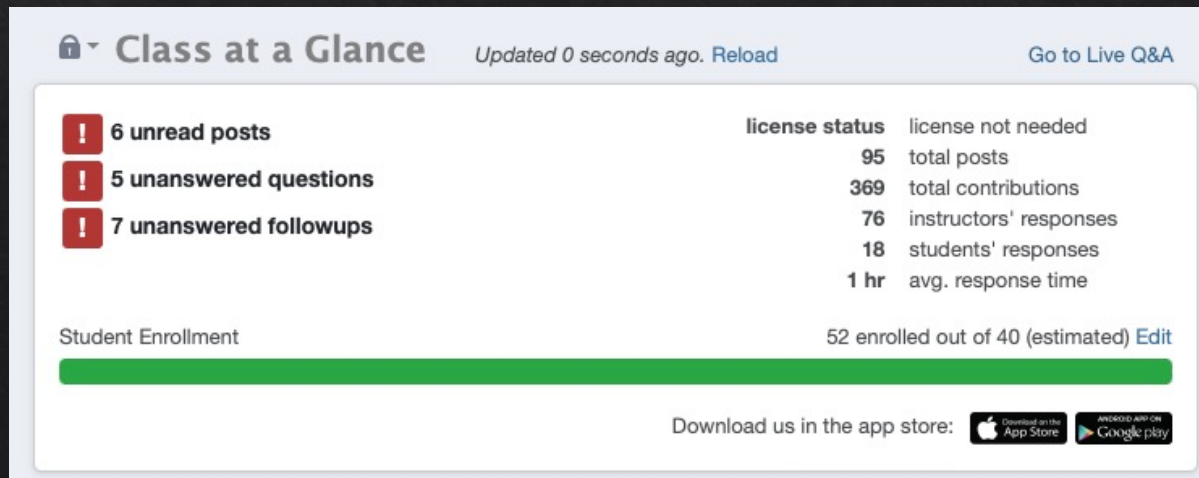
- **Student GMQa:** I was happy to see in-person lectures (however, there wasn't time for them because of the coursework).
- **Student mxPC:** IN PERSON TEACHING IS FAR BETTER THAN ONLINE/HYBRID TEACHING. There was no hybrid teaching.
- **Student NFUC:** I loved face-to-face teaching for this course. I've been to almost every lecture and if possible I would like to see it in other courses as well. Those lectures that I missed were recorded which was important as well.

*Please provide any additional comments you may have about the course, the teaching on the course or the resources that support it in the box below.*

- **Student GMQa:** I enjoyed the topics covered in the lectures, it was all interesting and Kartic is a great lecturer, however the 2nd coursework ruined the whole semester for me because of how difficult it was (for 2 weeks straight I was waking up to do CG and going to sleep after doing CG, with just CG in between). The idea of building a raytracer is great but terribly executed, please reconsider it for the next year so that it is possible to complete it while also being able to do other courses!
- **Student mxPC:** Dr Subr is passionate about the subject matter and most importantly - and excellent lecturer & teacher. The TA is also a wonderful.

# Top tips



- Try to attend as many lectures as possible in-person
- Work regularly – not just before deadlines
- Use your opportunity to interact with the instructor



**Class at a Glance** Updated 0 seconds ago. [Reload](#) [Go to Live Q&A](#)

<b>!</b> 6 unread posts	<b>license status</b> license not needed
<b>!</b> 5 unanswered questions	95 total posts
<b>!</b> 7 unanswered followups	369 total contributions
	76 instructors' responses
	18 students' responses
	1 hr avg. response time

Student Enrollment 52 enrolled out of 40 (estimated) [Edit](#)

Download us in the app store:  

previous offering