

# **Motion Capture and Future Interaction Technology Research**

Introduction & Overview of course

Speaker: Fu-Song Hsu

# What Is Motion Capture (MoCap)



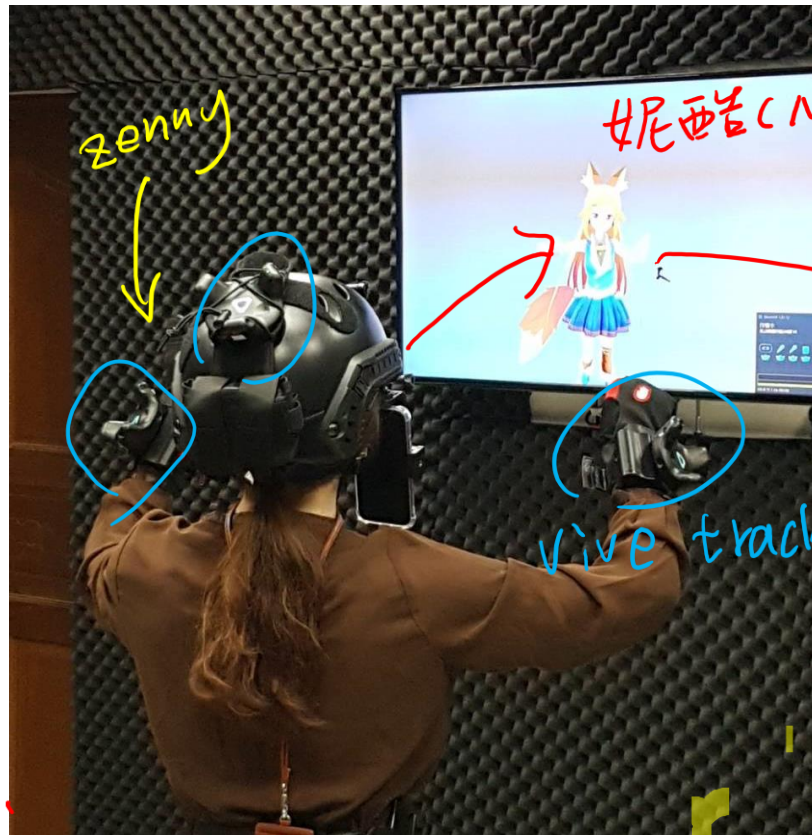
<https://www.youtube.com/watch?v=wb-SqPhRPGc&t=500s>



<https://www.youtube.com/watch?v=O7nNO3FLkLU>



# Exploring the Uses of Motion Capture



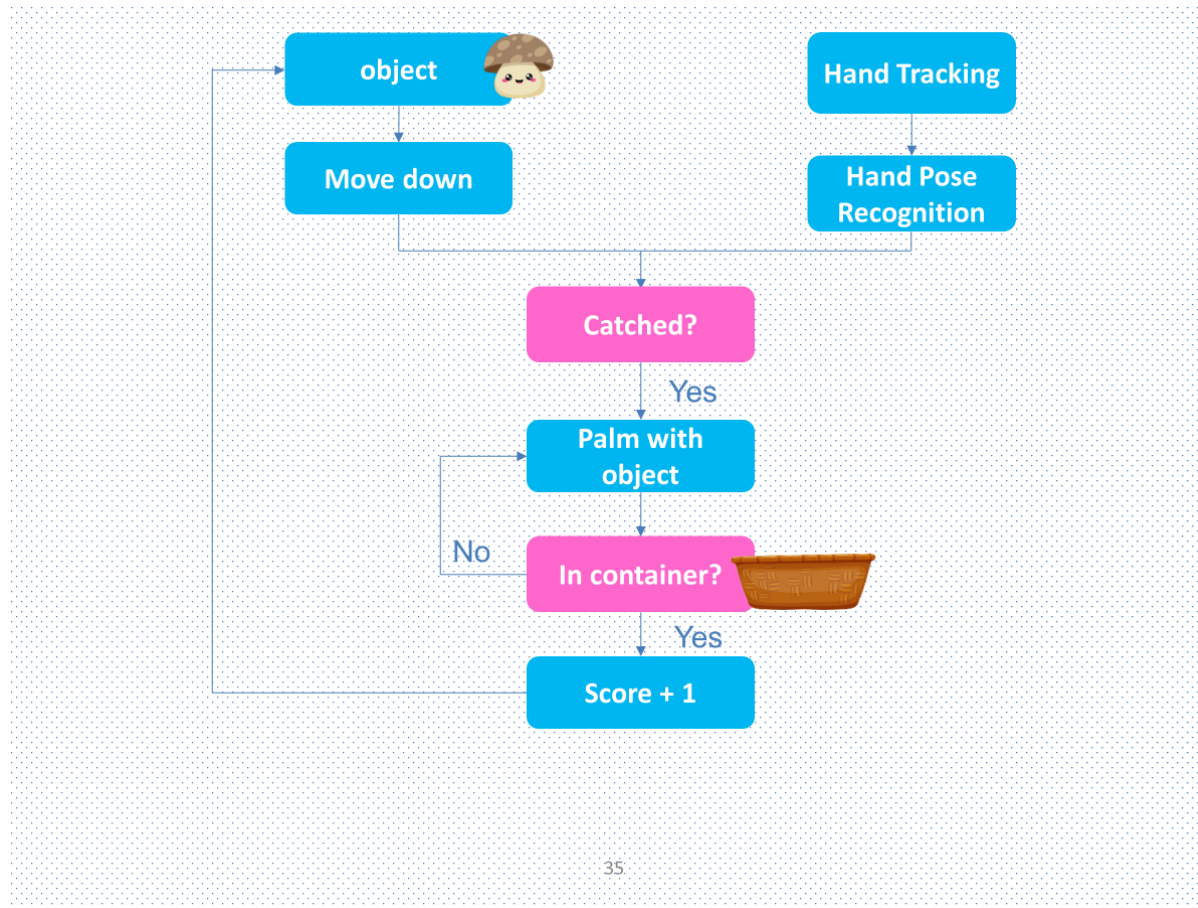
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# Exploring the Uses of Motion Capture



# 2025 Fall Semester Motion Capture and Future Interaction Technology Research course syllabus

[Download Word file of the course syllabus](#)[Download OpenDocument file of the course syllabus](#)

<b>Course name:</b> (Chinese) 動作捕捉及未來互動科技研究 (English) Motion Capture and Future Interaction Technology Research	<b>Dept. of course offering:</b> Institute of Communication Studies <b>Course code:</b> 534308
<b>Instructor:</b> 許富淦	<b>Permanent course No.:</b> HSCS30037 <b>Credits:</b> 3.00
<b>Prerequisite:</b>	<b>Required/Elective:</b> Required:Elective <b>Class Time/Room :</b> R234-HB204[GF]
<b>Course descriptions and objectives:</b> 課程概述與目標： 本綱要僅供選課參考，正式授課大綱將於開學第一週於課堂中公布。  Motion Capture (MoCap) plays a crucial role in various Virtual Reality and Metaverse applications. In this course, we discuss how MoCap technology tracks and records users movements, such as hand tracking, full-body tracking, eye tracking, and face tracking. The course is designed for beginners, explaining the basics of motion capture, including hardware and software. These concepts can be applied in future Virtual and Augmented Reality-mediated communication, such as user-driven avatars, bringing our creative visions of future human-computer interaction to life.  動作捕捉在各種虛擬實境和元宇宙應用扮演關鍵角色。在這門課，我們討論如何透過動作捕捉技術追蹤和紀錄使用者的各種動作，例如手部追蹤、全身追蹤、眼球追蹤和面部追蹤，本課程是為初學者設計，講解動作捕捉基礎知識，包括硬體和軟體內容。這些概念可以應用於未來虛擬和擴增實境中介傳播，例如使用者動作即時呈現的虛擬化身，將我們對未來人機互動的創意願景變為現實。	
<b>Textbooks: (Please indicate the book' s name, author, publisher and the publication date):</b>	

1	2025-09-04(四)	Introduction & Overview of course 課程介紹
2	2025-09-11(四)	Introduction to MoCap and Developer Environments 開發者環境介紹
3	2025-09-18(四)	MoCap with hand tracking (uses Google MediaPipe) 手部動作捕捉
4	2025-09-25(四)	Fundamental Structures of Python Programming for MoCap (I) Python入門教學(I)
5	2025-10-02(四)	Fundamental of Structures Python Programming for MoCap (II) Python入門教學(II)
6	2025-10-09(四)	Computer Vision with AI (I) AI視覺(I)
7	2025-10-16(四)	Computer Vision with AI (II) AI視覺 (II)
8	2025-10-23(四)	Midterm Exam 期中考週
9	2025-10-30(四)	The Core Functionality: Principles and Process (I) 動作捕捉核心功能(I)
10	2025-11-06(四)	The Core Functionality: Principles and Process (II) 動作捕捉核心功能(II)
11	2025-11-13(四)	The Core Functionality: Principles and Process (III) 動作捕捉核心功能(III)
12	2025-11-20(四)	People Detection and Depth Estimation(I) 人體偵測和深度估測(I)
13	2025-11-27(四)	People Detection and Depth Estimation(II): Human Motion Capture and 3D Reconstruction 人體偵測和深度估測(II): 人體動作捕捉和3D重建
14	2025-12-04(四)	Meeting for Final Project 專題討論
15	2025-12-11(四)	Work Day
16	2025-12-18(四)	Final Presentation 期末報告

Week 1~2 prior knowledge and Background

Week 3~7 Useful Programming Skills for MoCap

Week 9~11 Introduction to Mocap Mainly Solution (uses Goole MediaPipe)

Week 12~14 MoCap Project

Week 15~16 Final Project and Presentation

# Grading Policy

1	2025-09-04(四)	Introduction & Overview of course 課程介紹
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11	2025-11-13(四)	The Core Functionality: Principles and Process (III) 動作捕捉核心功能(III)
12	2025-11-20(四)	People Detection and Depth Estimation(I) 人體偵測和深度估測(I)
13	2025-11-27(四)	People Detection and Depth Estimation(II): Human Motion Capture and 3D Reconstruction 人體偵測和深度估測(II): 人體動作捕捉和三維重建
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70%

Class Work

Week 1~2 prior knowledge and Background

Week 3~7

Useful Programming Skills for MoCap

Week 9~11

Introduction to Mocap Mainly Solution  
(Uses Goole MediaPipe)

Week 12~14 MoCap Project

30%

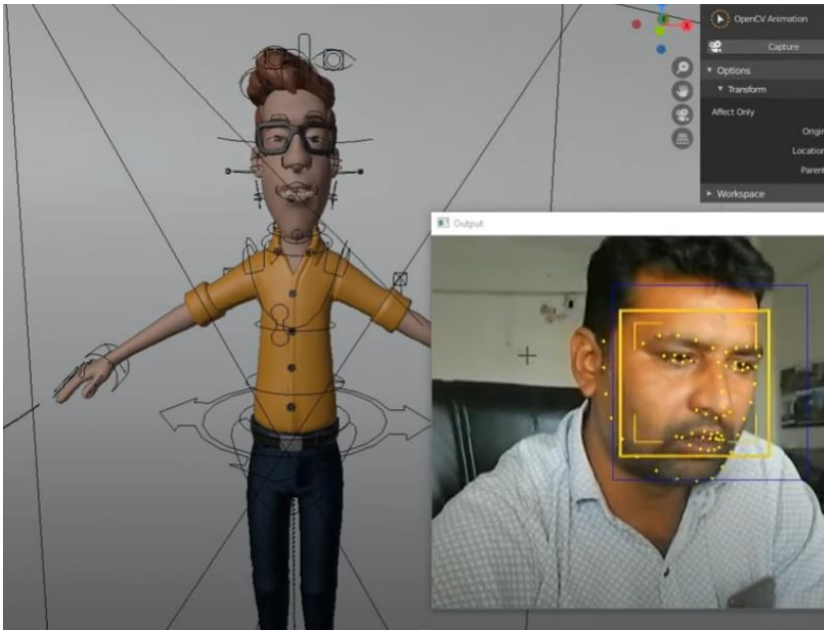
Final Project and  
Presentation

Week 15~16 Final Project and  
Presentation



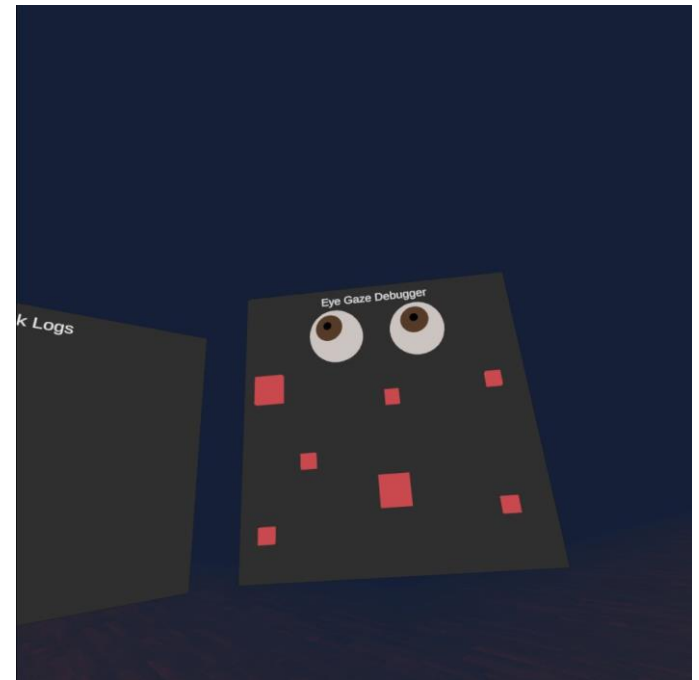
# Final Project: Exploring the Uses of Motion Capture in Metaverse(元宇宙)

Facial and Body MoCap Project  
(uses OPENCV and MediaPipe)



[https://github.com/jkirsons/FacialMotionCapture\\_v2](https://github.com/jkirsons/FacialMotionCapture_v2)

Eye and Face MoCap Project  
(uses the Meta Quest Pro)



<https://github.com/jemmec/metaface-utilities>

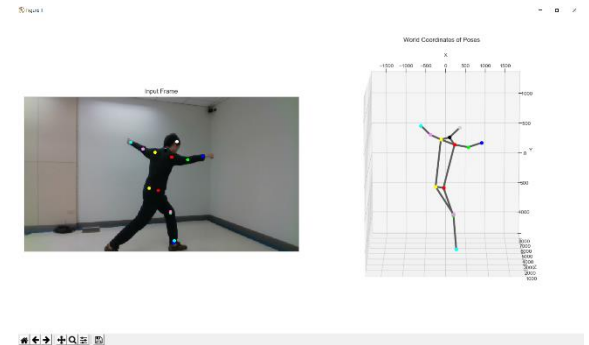


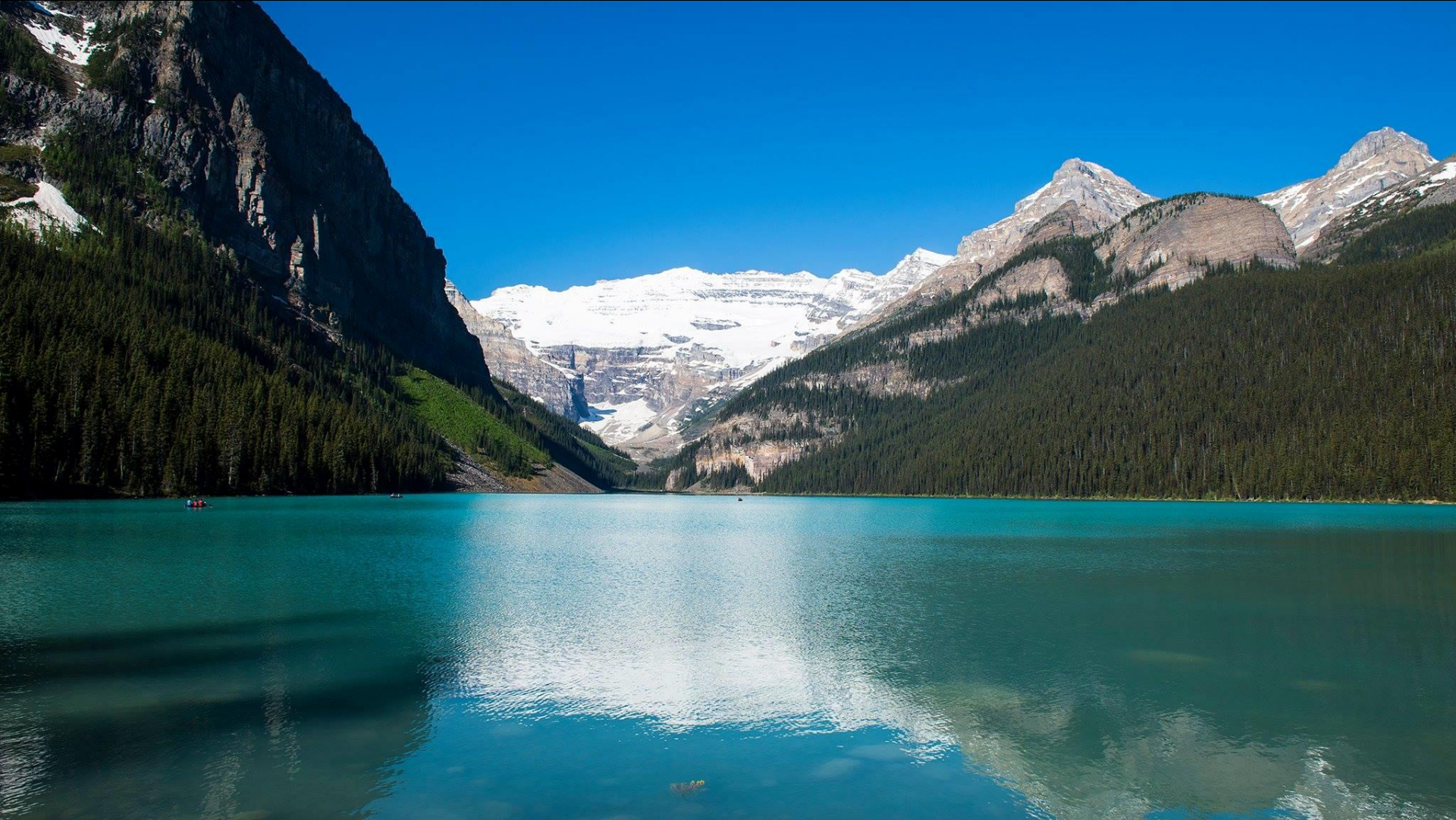
# Final Presentation

- The final presentation (30%) is a demo presentation of the topic of your choice, that is attended by the entire class.
- Short Demo Video (3-minute)
- Recommend 20-minute presentation should have between 15-20 slides

# Student Laptop Recommendation

- Strongly recommends that all students have a laptop good enough to support the minimum requirements necessary for coursework
- **Minimum requirements**
  - Operating System: Windows 10
  - CPU : Intel Core i5 or later
  - Memory : 8GB or more
  - disk space : 100GB or more





**Q&A**