

Final Project of Machine Vision

Motion Prediction

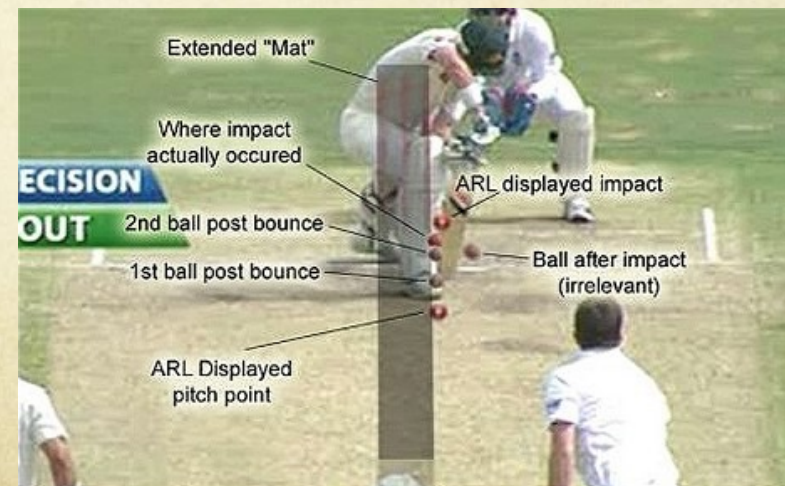
Prof. Chi-Cheng Cheng

Dept. of Mechanical and Electro-Mechanical Engineering

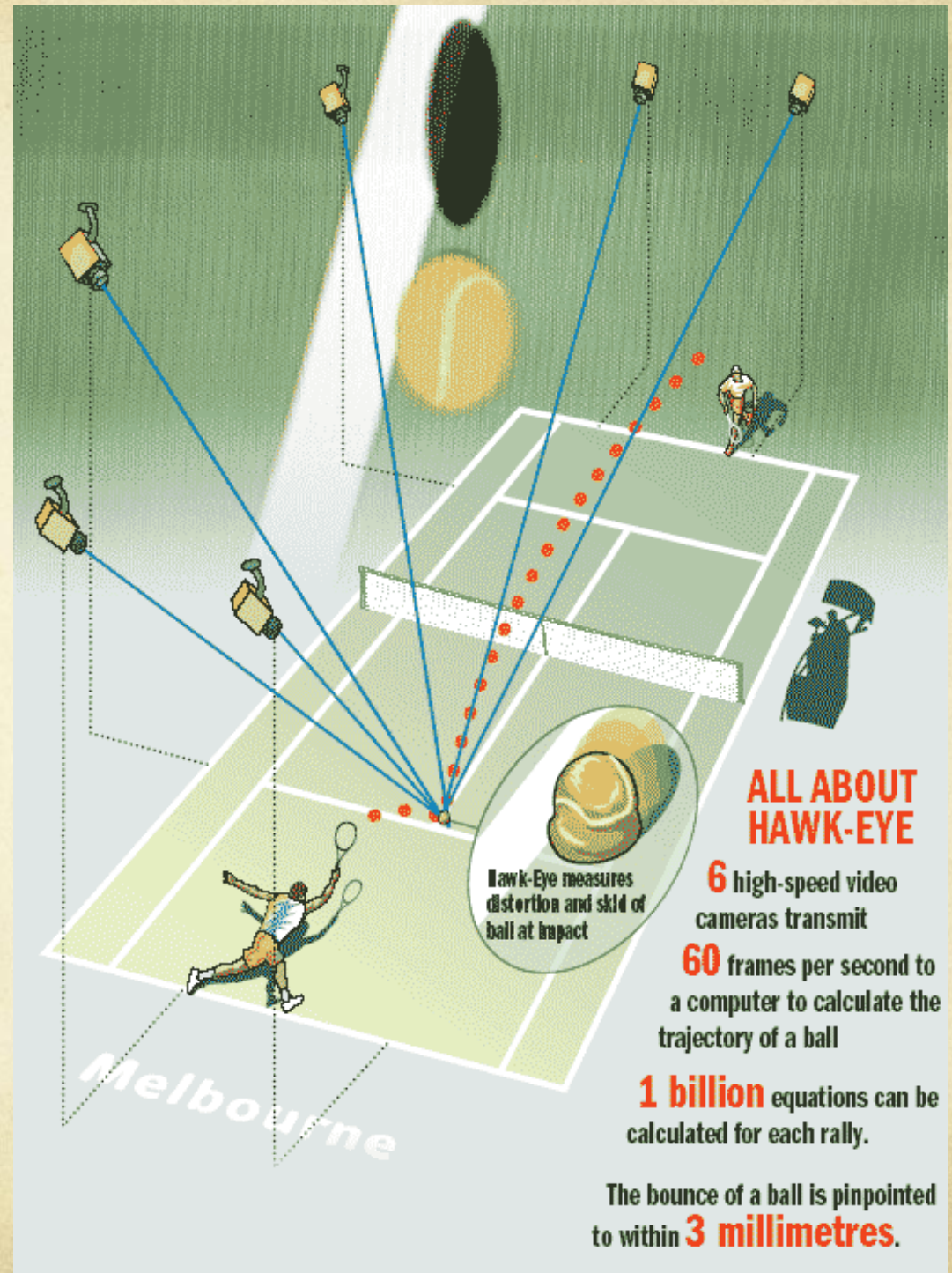
National Sun Yat-Sen University

Background

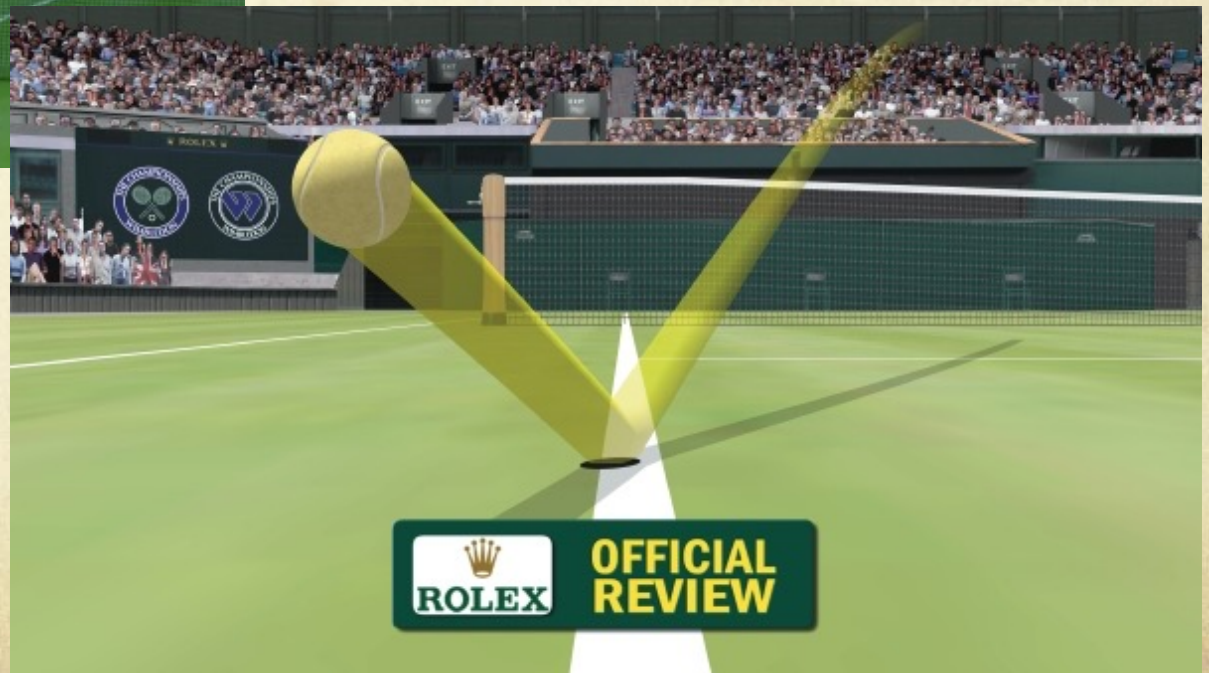
- The hawk-eye coaching system: The officiating Replay System (ORS)
- To track the path of a moving object
- Sport events, such as tennis, cricket, soccer, and snooker
- Multiple cameras, usually six



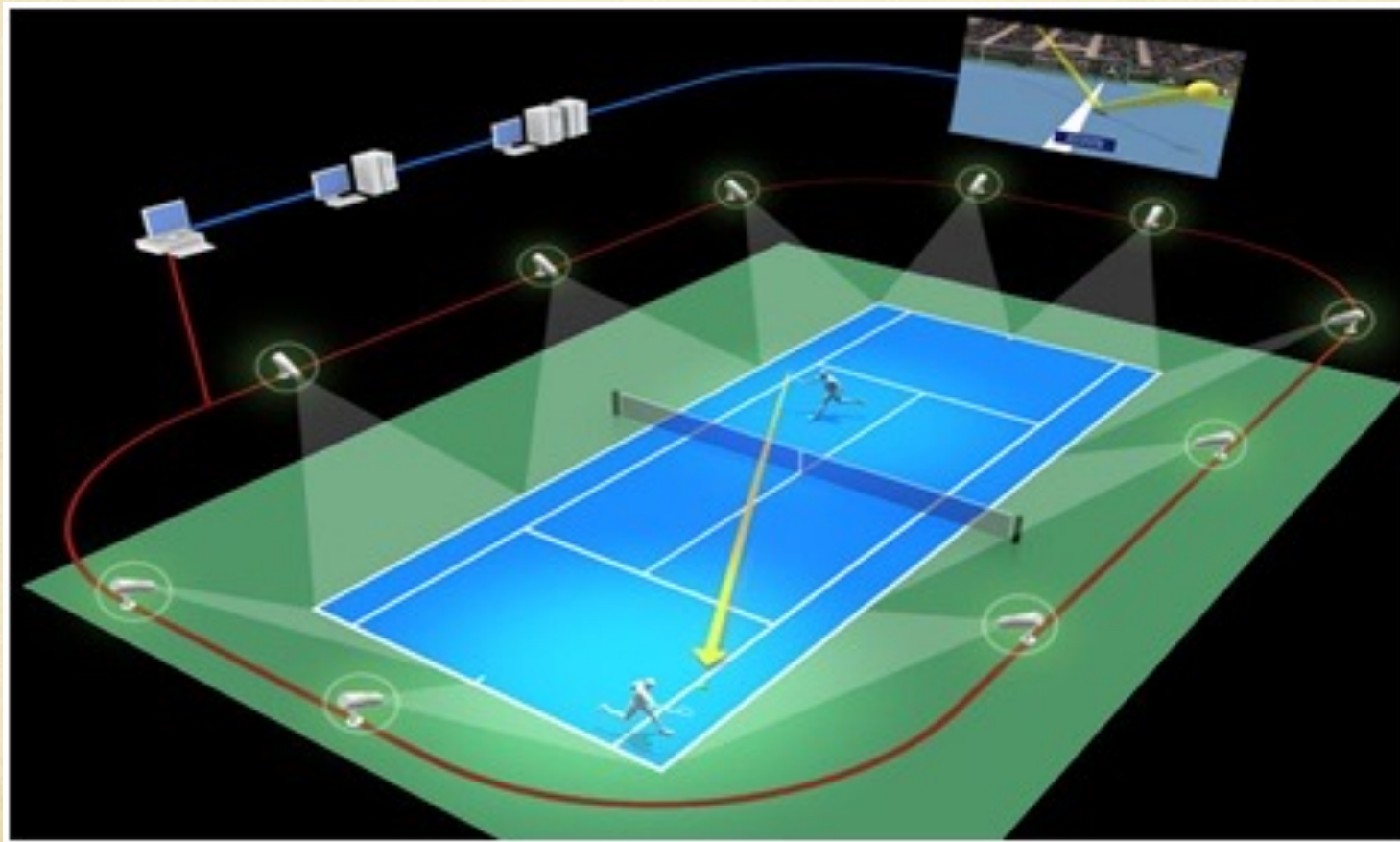
All about the hawk-eye



The hawk-eye technology in a tennis court



Modern hawk-eye system



Final project: Motion prediction

1. You will be given two compressed files, machine vision TAKE_1.zip and machine vision TAKE_2.zip.
2. Each one has 10 images. The file names with L and R represent the images taken by the left camera and the right camera, respectively.
3. The last number in file names stands for the sequence number.

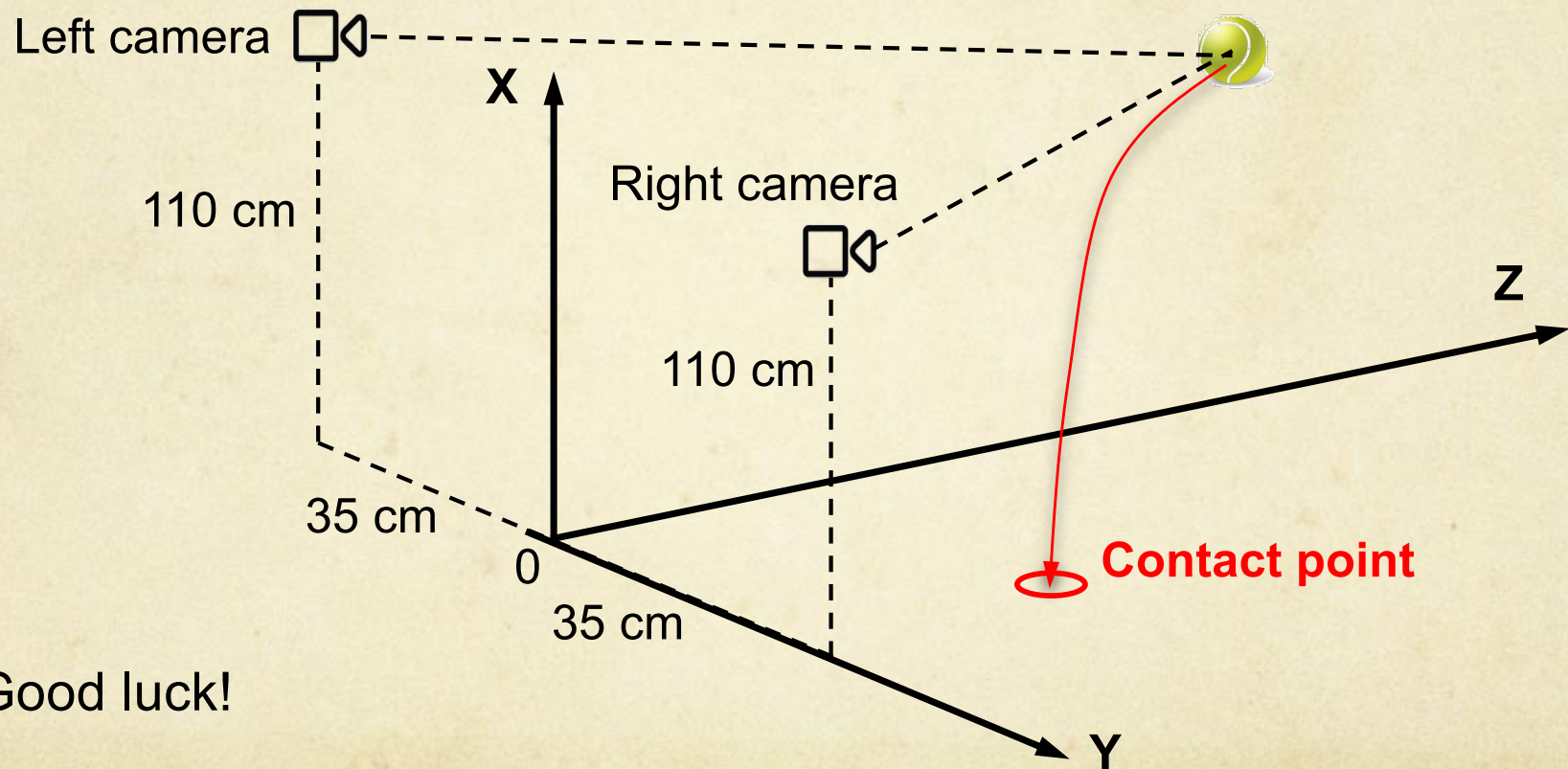


Final project (cont'd)

4. The frame rate is 25 fps.
5. The height for both left and right camera is 110 cm and the horizontal distance between left and right cameras is 70 cm.
6. Focal length: 6.3 mm
7. CCD size: 1/2.5 in (1 cm), 5.7 mm*4.29 mm
8. Image resolution: 640 * 480 pixel
9. Your job is to predict the **position** and **velocity** where the tennis ball touches the ground.

Final project (cont'd)

10. The reference system is defined as follow:



11. Good luck!