

CV Projects

Sports

Projects for A.Y. 2022-2023



What we expect:

- Look for state of art methods
- Implement and test
- Improve
- Read as much as you can
- Make assumptions
- Record videos
- Use pre-recorded data

Projects for A.Y. 2022-2023



What we expect when ask for a meeting?

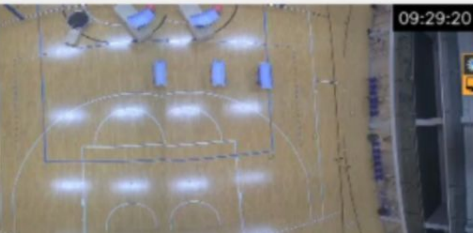
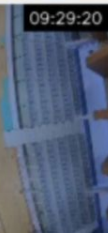
- Show that you tried
- Show difficulties encountered and actions taken to resolve

Notes!

- Deep Learning is welcome, but not required
- Videos are for internal use only. Do not share them.
- The evaluation of your project depends more on your interaction with the tutor rather than on the results
- The goal of the project is for you to learn something and face the real-world issues
- The project is individual for each group, but you are allowed to communicate, share ideas, share best practices. It is not a competition.
- Anyone does not have a group and would like to join one?

Sanbapolis facility





2 projects available:

- 1) Project 1: Top view stitching and tracking (tracking and geometry)
- 2) Project 2: 3D camera calibration (geometry and 3D reconstruction)

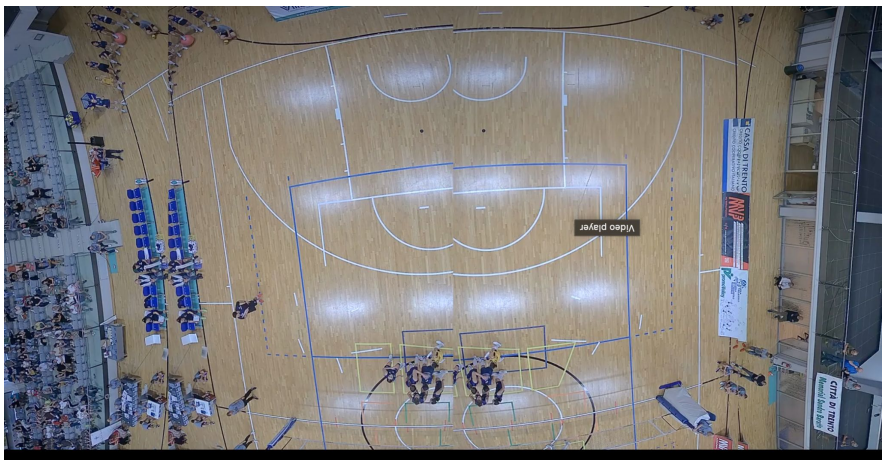
Project 1: Top view stitching and tracking (tracking and geometry)

Goal:

- 1) Create a top-view stitch of the whole court
- 2) Apply detection algorithm on top-view images and evaluate the performances
- 3) Apply tracking on the detected bounding box and evaluate the performances

Bonus:

- 1) Color-based team identification
- 2) Ball tracking



Materials

- Starting point: <https://github.com/cannox227/camera-dewarping>
- Videos:
https://drive.google.com/drive/folders/11RhLrWwb_tH9uLBCGraR55N0_Lnna-ww-?usp=sharing

Project 2: 3D camera calibration (geometry and 3D reconstruction)

Goal:

- 1) Create a 3D reconstruction of the camera positions relative to the field

Step 1: intrinsic camera calibration. Step 2: extrinsic camera calibration

- 2) Develop a tool where you click on the field/on one camera and the same point is visualized on all the other cameras

Bonus:

- 1) 3D ball tracking

Materials

- Starting point: <https://github.com/Elia-Tomaselli/CV-CameraCalibration>
- https://drive.google.com/drive/folders/1P6Bs7bx_CGXWCbx_5wyAnqc8fPY2SGxO?usp=sharing
- Videos:
https://drive.google.com/drive/folders/11RhLrWwb_tH9uLBCGraR55N0_Lnna-?usp=sharing
- Calibration Videos:
https://drive.google.com/drive/folders/15_CCC2mGQZmn3WqdCiWEGJuTSz584Ch0?usp=sharing
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How do I deliver my project?



- Code (on a zip + git)
- Dataset (if not standard)
- Output images/videos
- Report with results (max 3-6 pages)
- Video (5 minutes) including
 - Motivations and background
 - SoA
 - Methodology
 - Results