

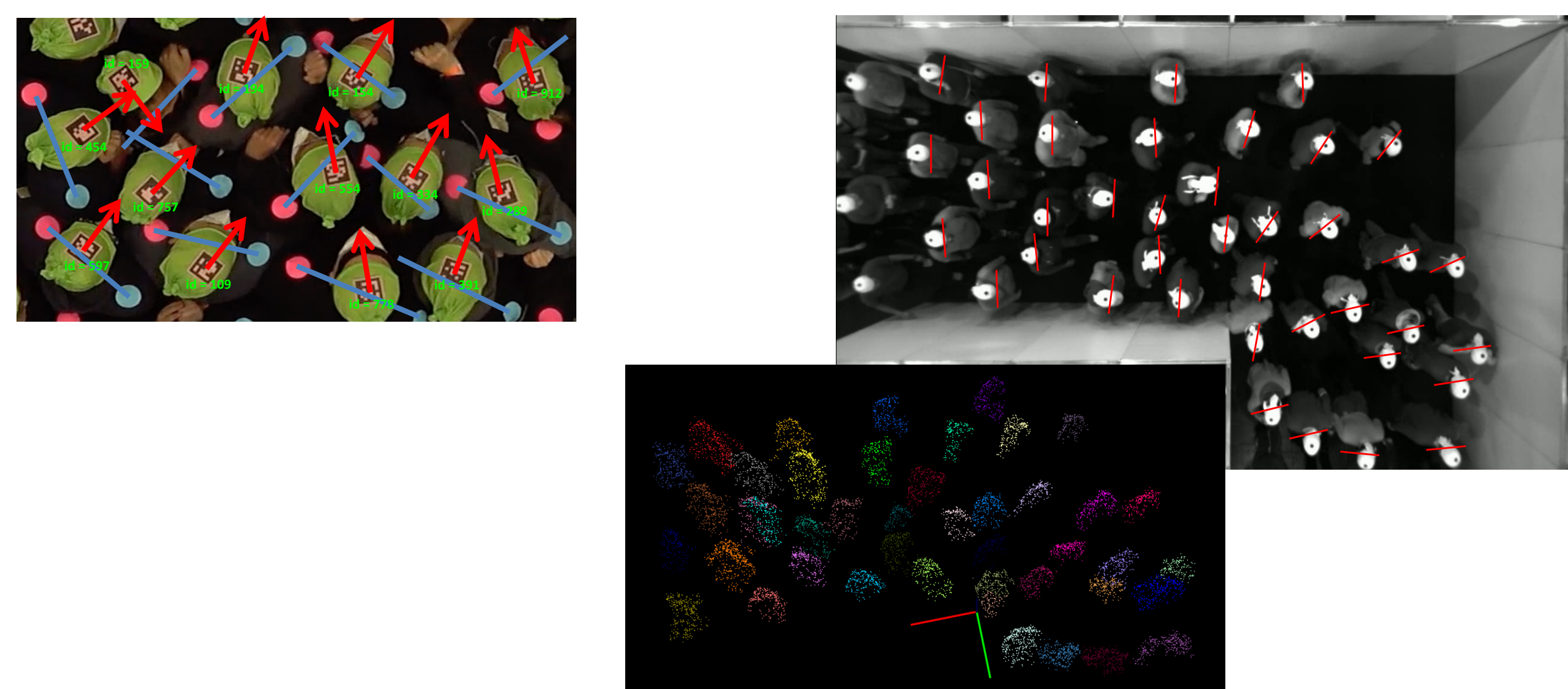
# 3D Motion in Crowds



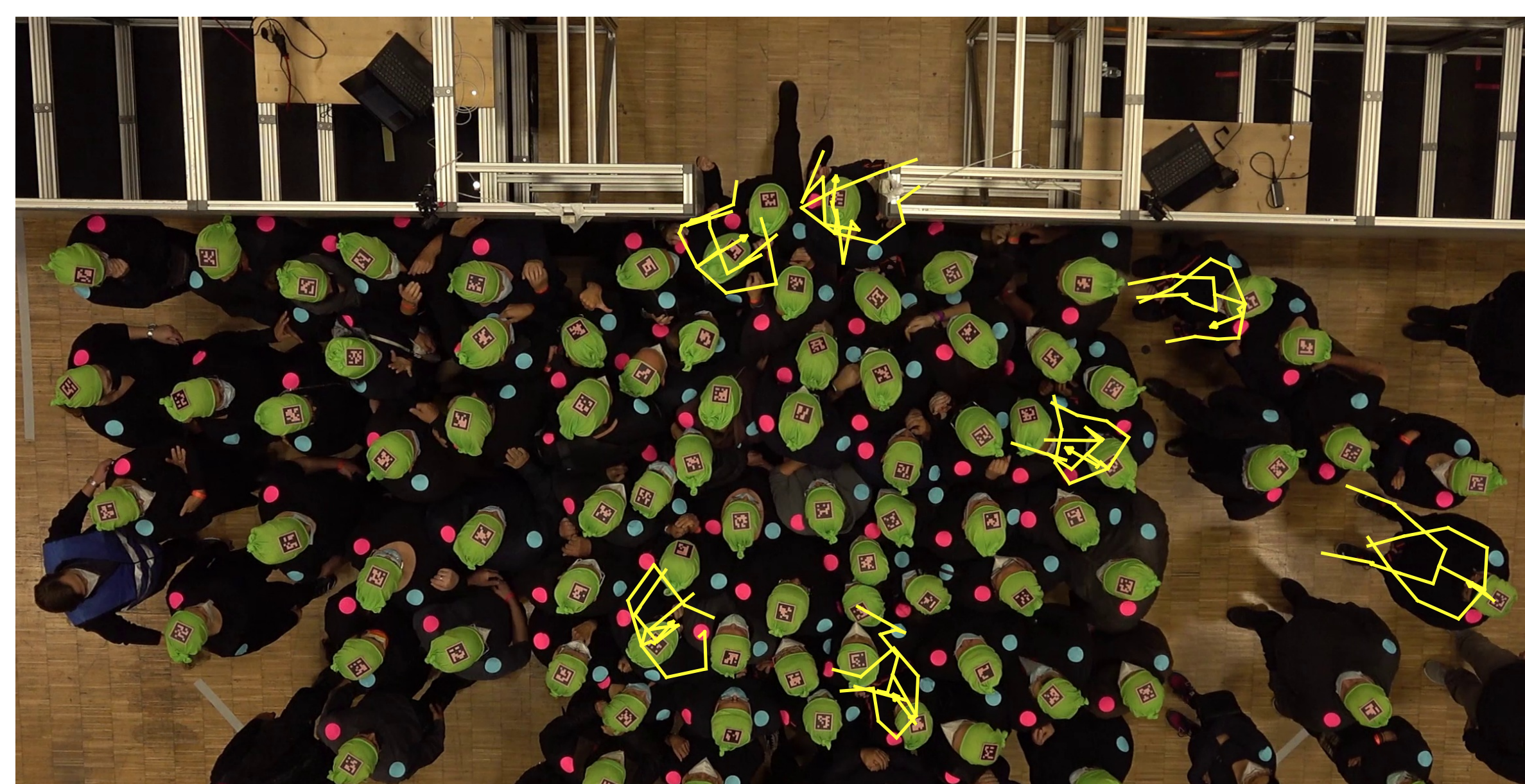
**Goal:**  
Understanding effects like clogging or threading into a bottleneck to increase safety for pedestrian traffic

## Tracking 3D Motion in Crowds

Utilizing markers, stereo cameras and AI methods to extract **upper body orientation**:



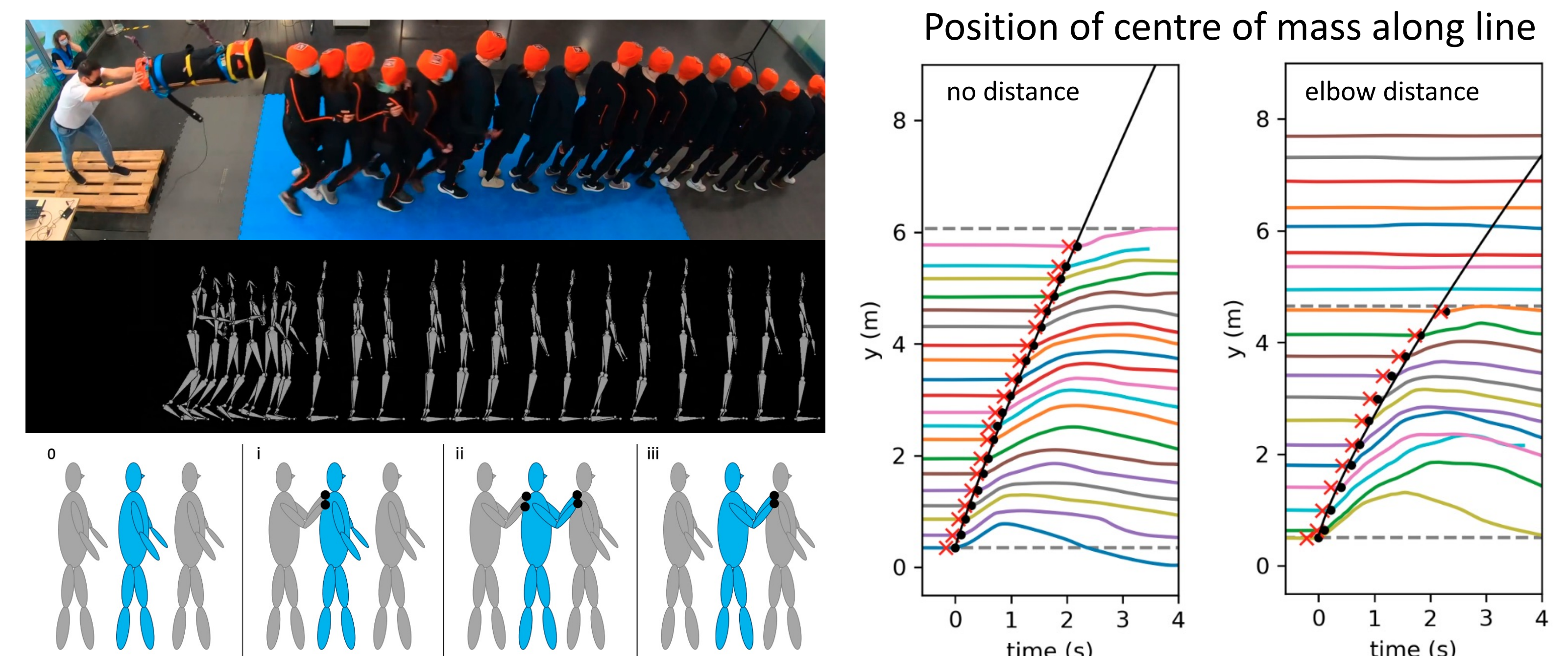
Using IMU based 3D motion capturing systems to capture relative **full body motion**, fused with the absolute camera centric position gives **real 3D motion in crowd**:



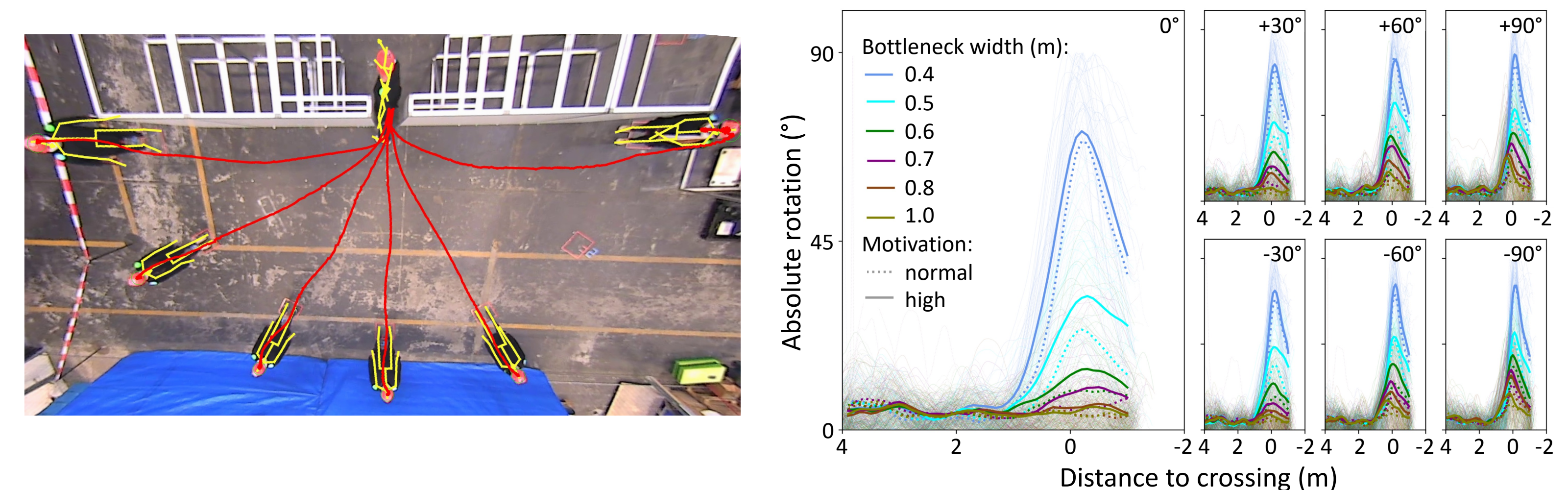
Provide **empirical database** with FAIR open data for modelling, validation and data intensive AI methods

## Results by Example

More distance between people damps **impulse propagation** and lowers propagation speed:



**Shoulder rotation** is more pronounced the greater the approaching angle, the smaller the bottleneck width and the higher the motivation:



Ongoing work:

- Analyzing **locomotion strategies** and **injury potential** in dense crowds
- Automatic detection and **classification of motion patterns** and strategies with help of AI

