# Suggested Names

* Position tracking of writing instrument with video stream and accelerometer data <https://www.sciencedirect.com/science/article/pii/S1566253516301932>
* Data fusion strategies for orientation and position prediction: overview, challenges, novel orientations. <https://www.sciencedirect.com/science/article/pii/S1566253520303158>
* Heterogeneous sensor data fusion to predict orientaiton and position in real time environment. <https://www.sciencedirect.com/science/article/pii/S1566253518308807>

# Types

## Comparison with other hardware systems

Comparison with smartech

* Lecture is recorded as traditional video that takes much storage and requires higher bandwidth networks to stream or download.
* They use touch boards and special projectors integrated that make the system expensive
* Not native environment, instructor have to adapt the new environment
* While writing on smart board, there may be occlusion
* There exists a lag (even of milliseconds) that make it difficult to write natively.

## Marker tip trajectory prediction

Issue with Euler angles:

* Order of rotation will affect the final orientation. E.g., 30° X then 30° Y will yield different orientation as compared to 30° Y then 30° X.
* An object may be oriented in a situation where two axes represent the same rotation. This is known as gimble lock. Hence object loses a degree of freedom

### Calculations

Let dimensions of white board are

Board Width = W

Board Height = H

Distance of marker tip from glowing ball = D

Camera1 observed offset = O1

Camera 2 observed offset = O2