

Sensorprint: Information Authentication for Mobile Systems

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<https://users.cs.fiu.edu/~carbunar/caspr.lab/liveness.html>



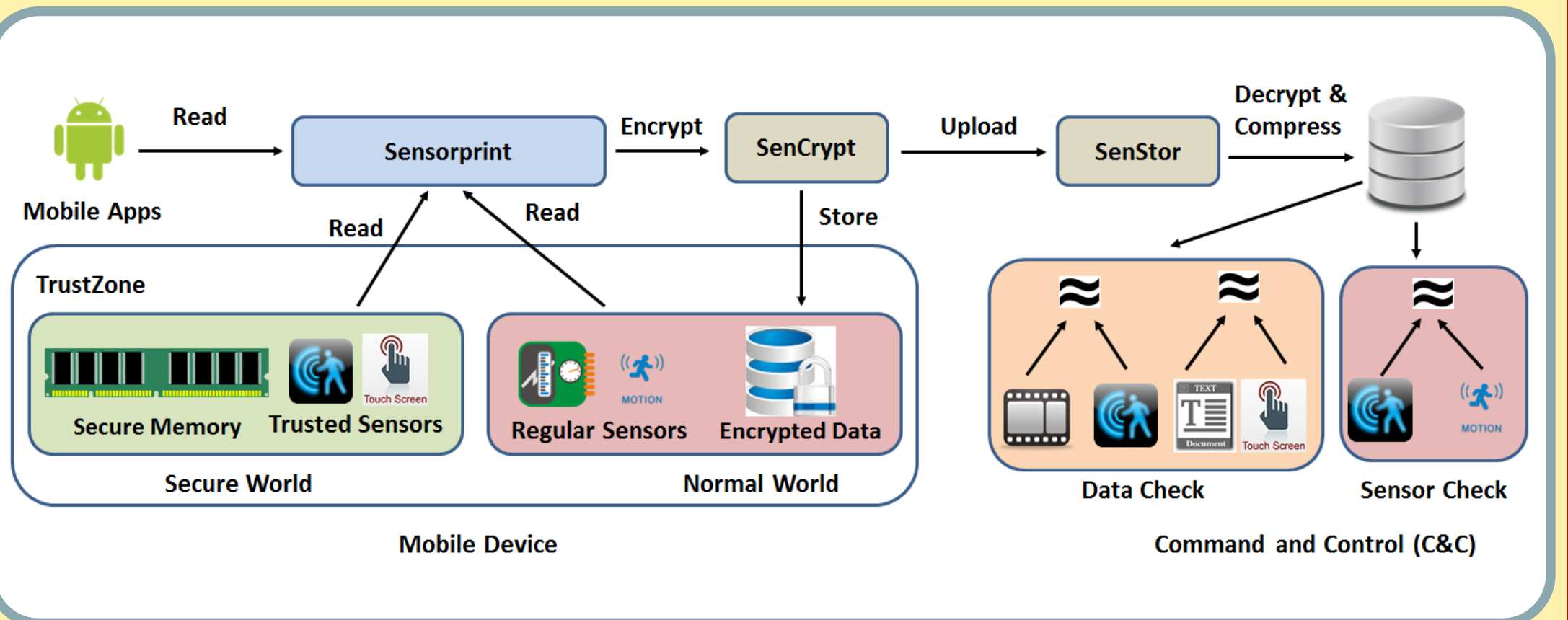
Objective: efficient and secure mobile data authenticity and integrity

Fake Germanwings pictures circulate online
 Airbus plane crashes in Southern France: Reuters
 A YouTube video claiming to be of Tuesday's crash of a Germanwings flight is actually from Afghanistan and is two years old.

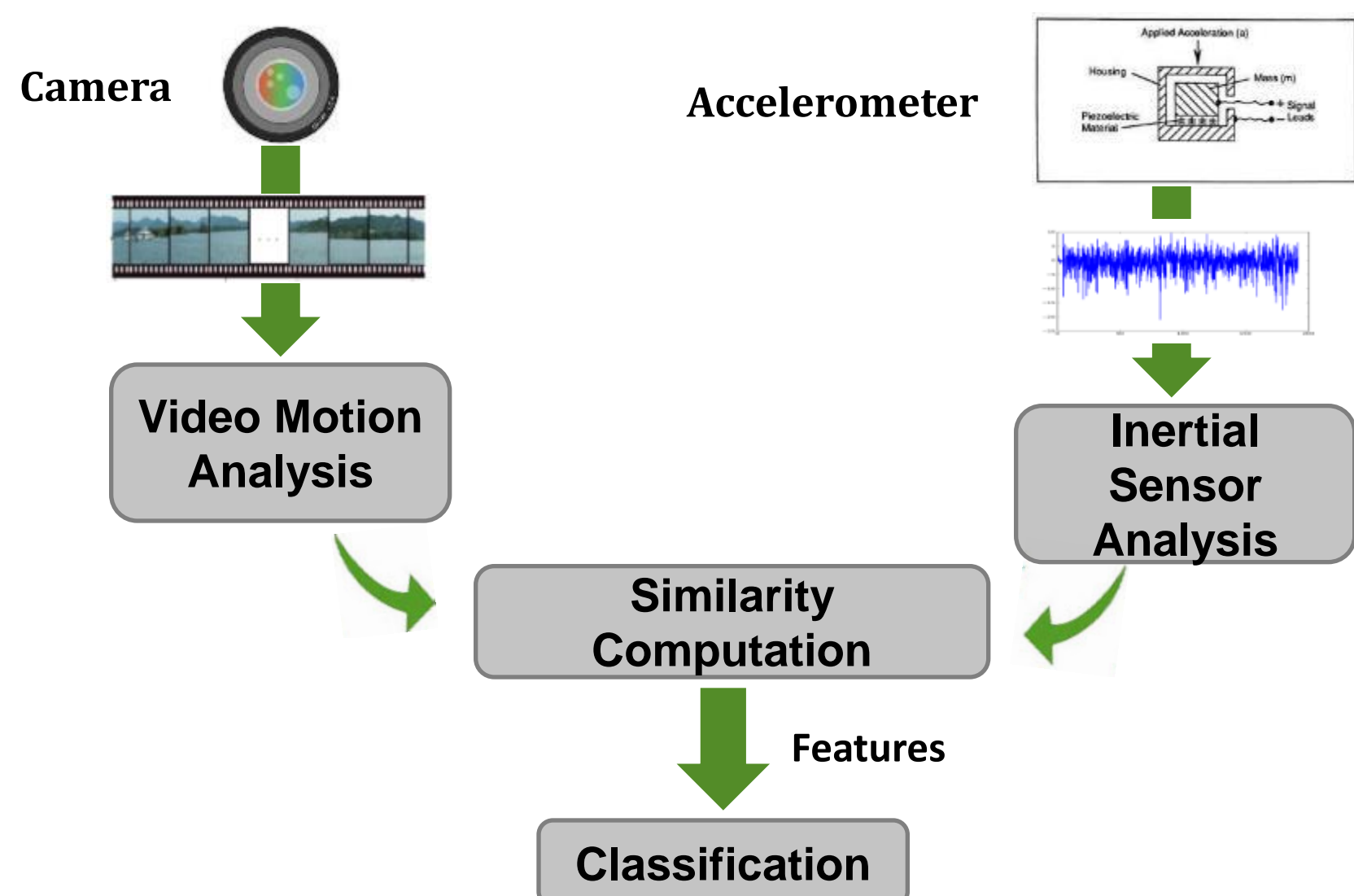
#BBCTrending: The fake 'MH370 search' video that went viral
 A video of a ship supposedly searching for the debris of the MH370 flight has been widely shared on social media and picked up by news organisations - including a British newspaper. The problem is it has nothing to do with the search at all.

Adversary Strategies: Projection Attack

- Project attack target video
- Use mobile device to film projection
- Outcome: Claim video
 - Authorship
 - New location and time of capture



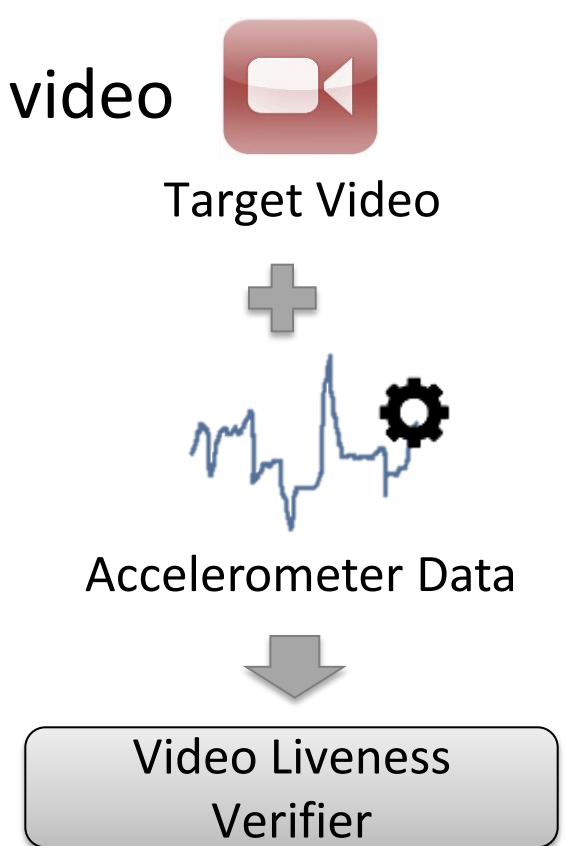
Accelerometer Based Liveness Verification



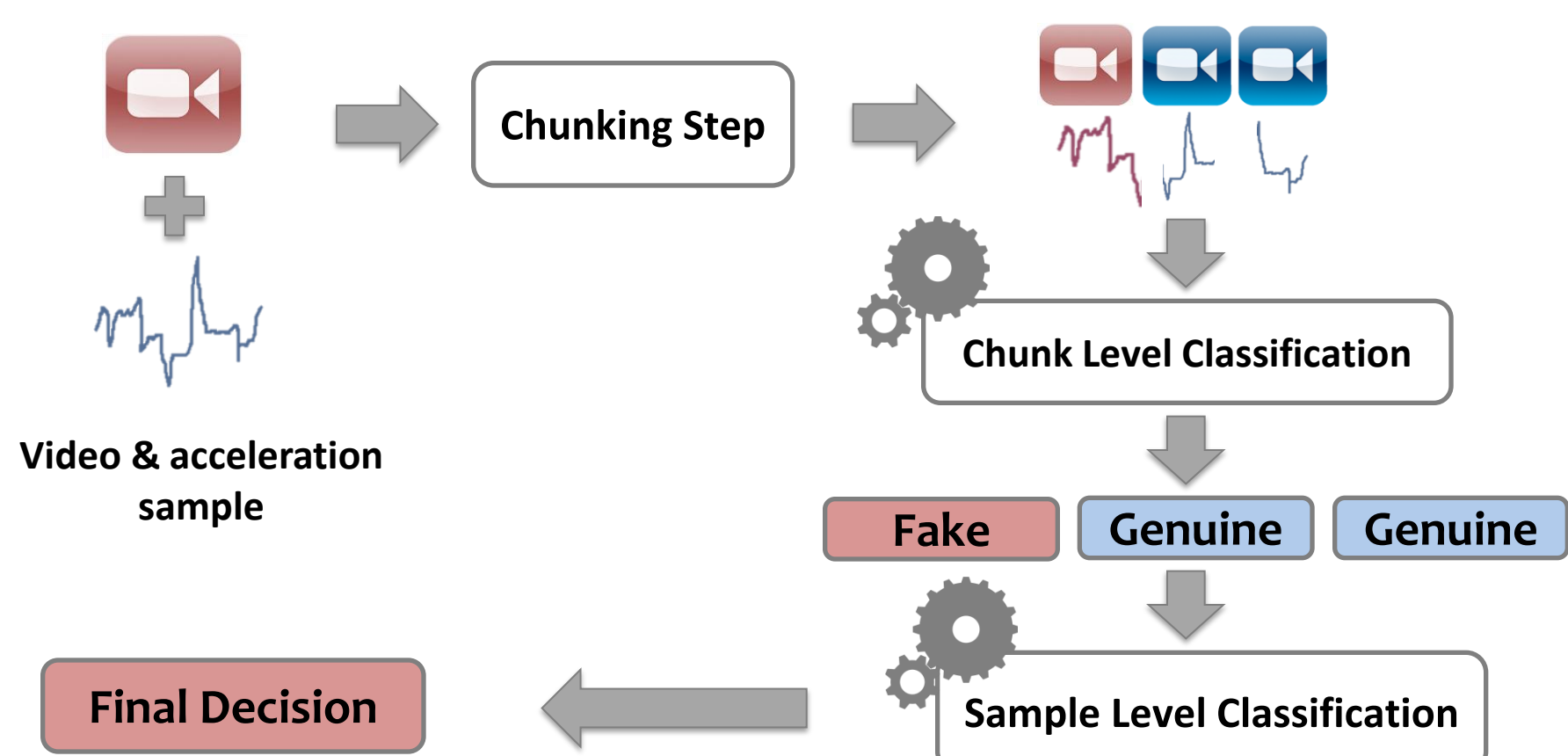
Video Liveness Analysis Attacks

- Given a target video
- Engineer acceleration sample that passes video liveness verifications

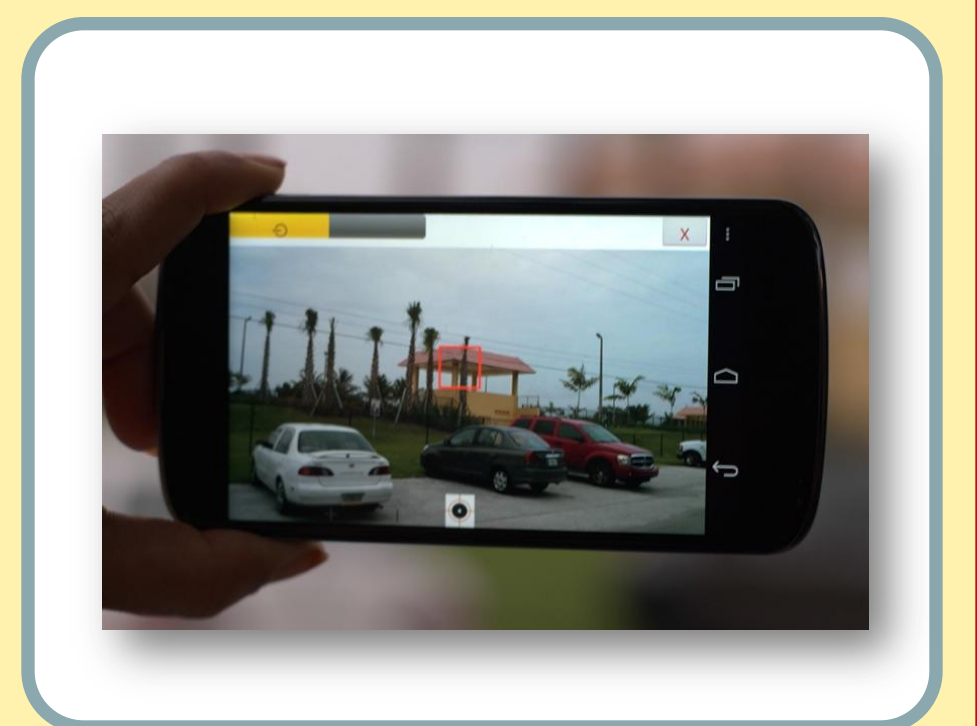
- Sandwich Attack
- Cluster Attack
- Stitch Attack



Vamos: Video Accreditation through Motion Signatures

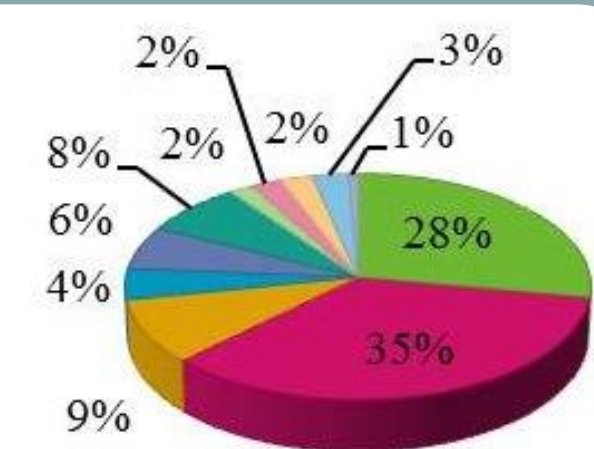


Category ID	Distance to Subject	User Motion	Camera Motion
1	Close	Standing	Stationary
2	Far	Standing	Stationary
3	Close	Walking	Stationary
4	Far	Walking	Stationary
5	Close	Standing	Scanning
6	Far	Standing	Scanning
7	Close	Walking	Scanning
8	Far	Walking	Scanning
9	Close	Standing	Following
10	Far	Standing	Following
11	Close	Walking	Following
12	Far	Walking	Following



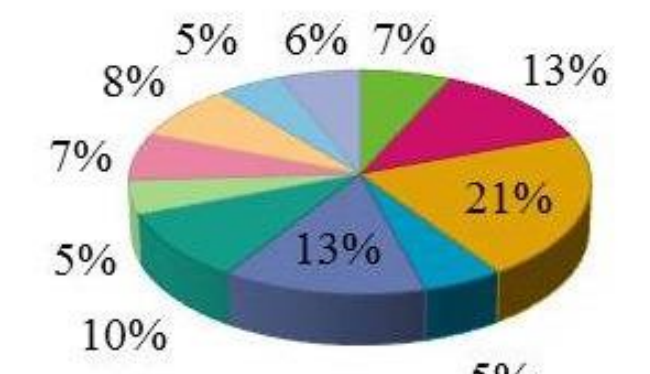
Youtube Video Dataset

150 (13,107 seconds) random citizen journalism videos from YouTube from 139 users

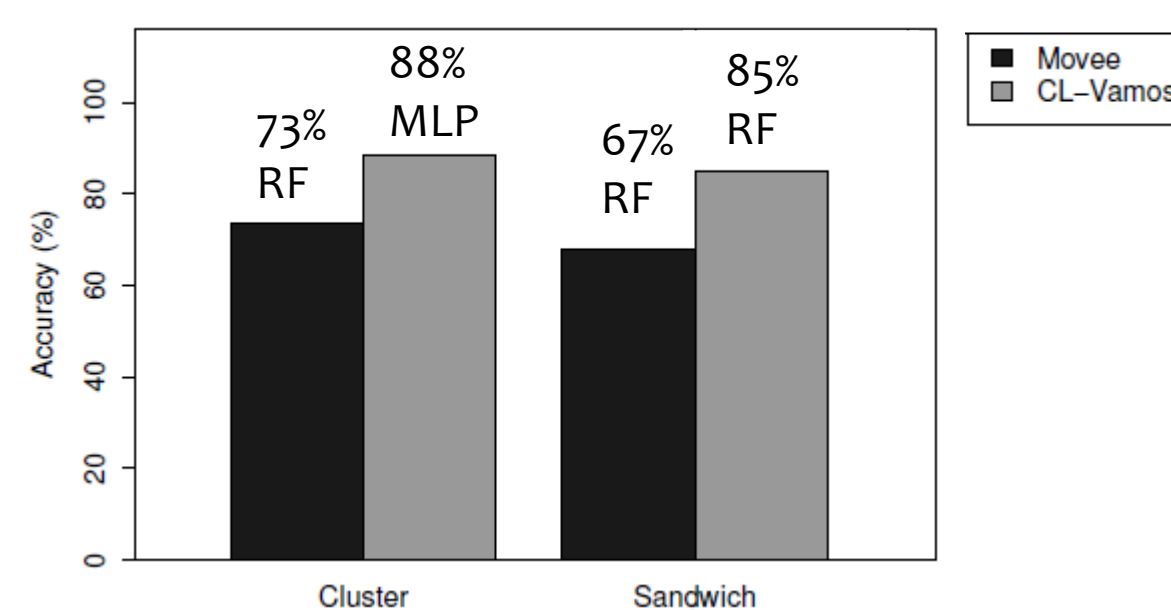


Free Form Video Dataset

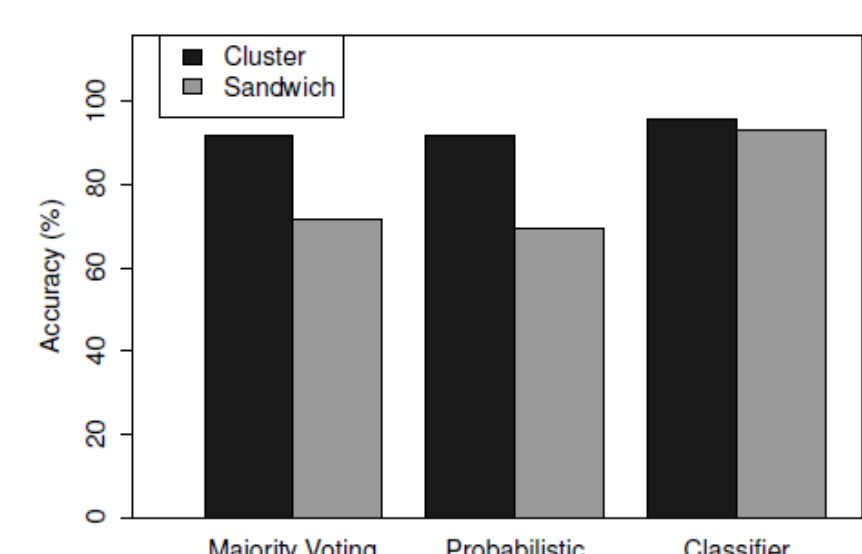
160 videos captured by 16 users
 401 genuine video & acceleration chunks



Legend for Categories: 1, 2, 3 and 7, 4, 5, 6, 8, 9, 10, 11, 12



Vamos improves by more than 15% over Movee, for both cluster and sandwich attacks



Vamos accuracy on **stitch attacks**: The Bagging classifier based approach exceeds 93% accuracy

Interested in meeting the PIs? Attach post-it note below!