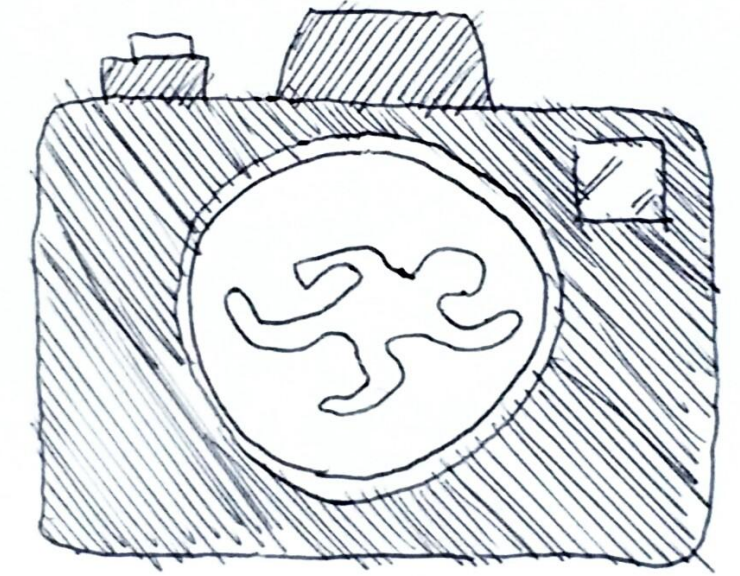


# Efficient Forensic Photos

## Pier 37: ID Hunters

Final Presentation



Find us at: <https://theportatcern.github.io/Hackathon2016-Pier37/>



# The context

**Natural disasters  
with thousands of  
victims ...**



**Aftermath of Hurricane Matthew, Haiti,  
Oct 4, 2016**



# A forensic identification problem ...

	Flood
	Storm
	Drought
	Landslide
	Earthquake & Tsunami
	Wildfire
	Extreme temperature
	Volcanic activity
	Mass movement (dry)

# On-Site Bodies Collection



## Morgue

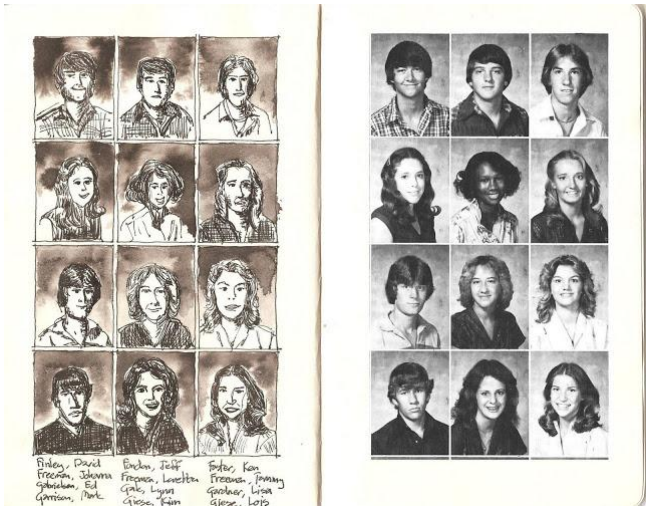


## Data collection



## Body cremation

## Family identification





**Body on table leads to issues in framing the full body picture.**

**Main issues:**

- Frame
- Light
- Focus
- Stability

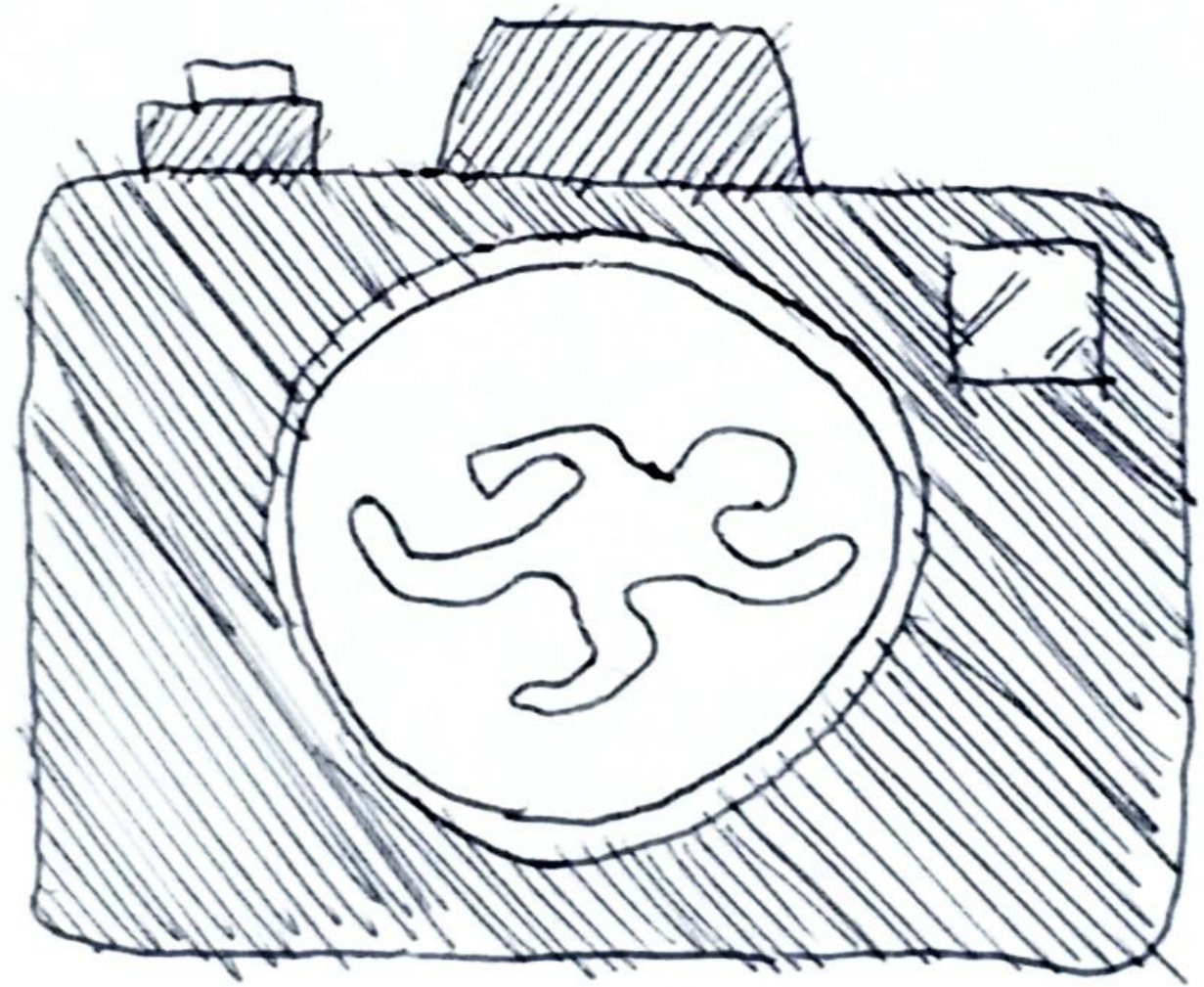




What we aimed for?

# PORtable Photo Studio (POPS)

- A Forensic Photo  
Toolkit



# Constraints

- Use existing cameras- all kinds of SLR Camera
- Inexpensive readily-available components
- Compact - fits in a normal size backpack
- Easy to use by first responders (Police or Forensic Staff)

**Adaptable and universal solution required**





# Stability while taking Pictures



**Before**



**After**



# Lighting



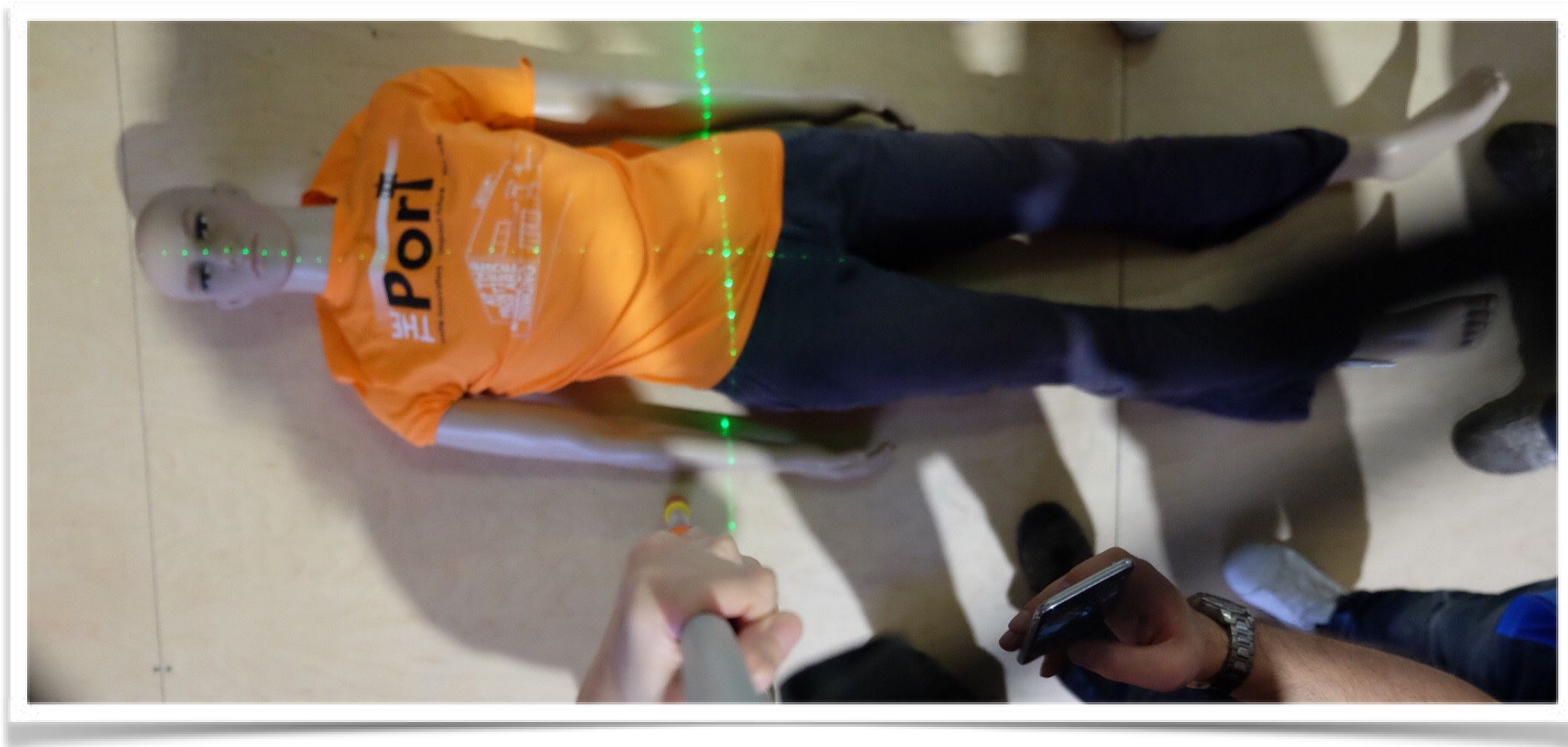
Light and  
foldable  
structure

+

LED strip

# Laser framing

- Framing using reference given by the laser
- Can be used in the post-process phase to calculate dimensions

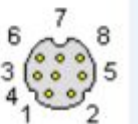
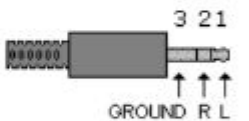
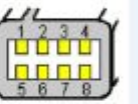
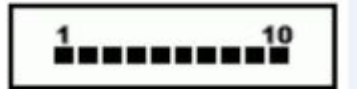
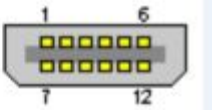
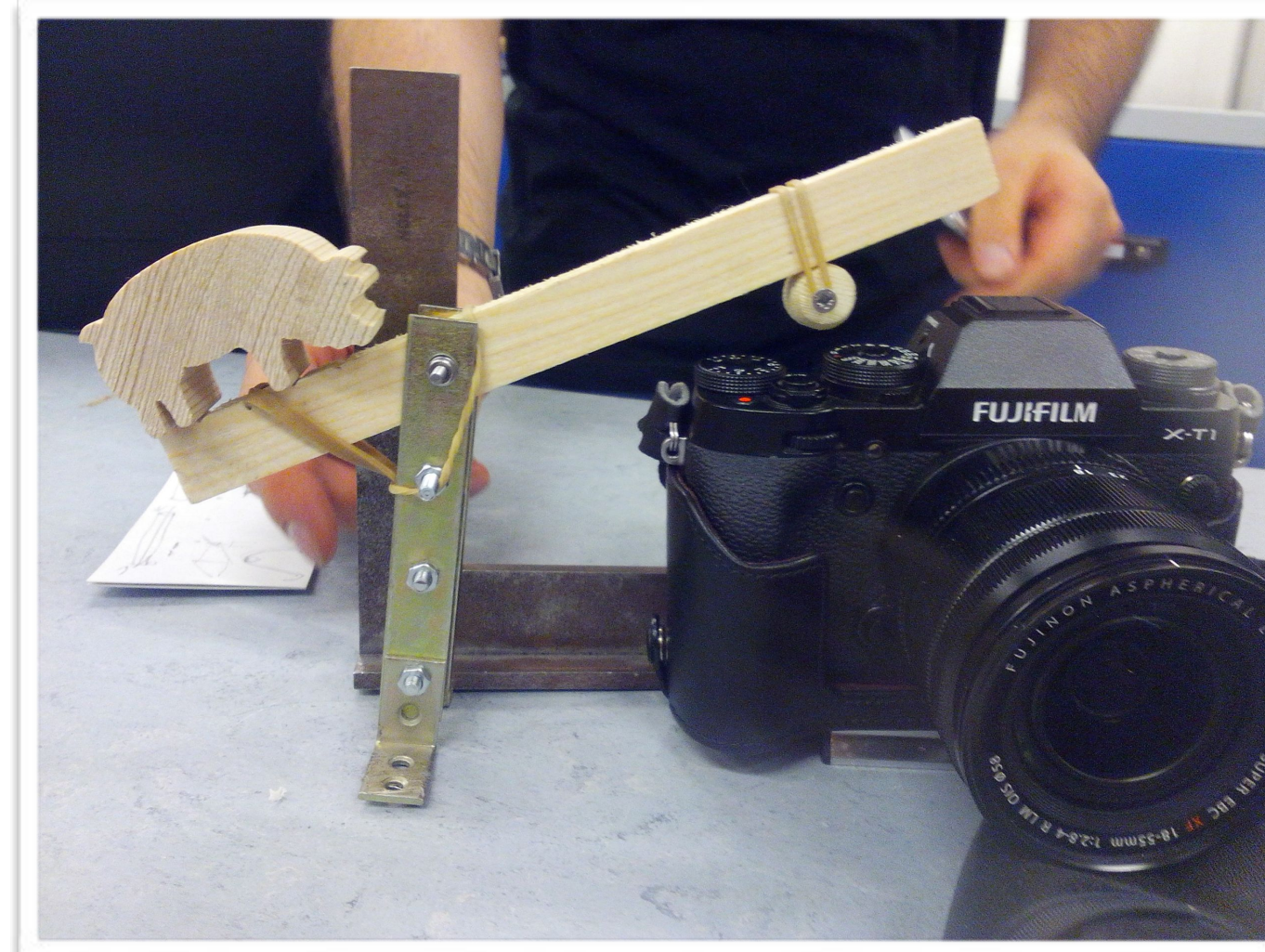






# Analog trigger

- Not all cameras have remote control, not universal
- Camera is ~1.5m away
- We need a universal mechanism to trigger the camera



# Resources

## Hardware list

Item	Price	Purpose	Alternative Options
2x Class 1 lasers	6 \$	Markers	
Camera clamp	15 \$	Attach the structure to any stick	
Electrical switch	< 1 \$	Activate the laser markers	
2 meters electrical wires	< 2 \$	Connection for the lasers	
Cable ties	< 1 \$	Fixing lasers to metallic structure	
Bicycle brake kit	17 \$	Trigger for the DSR camera	Camera Remote Control with smartphone
Metallic parts	5 \$	Support for the DSR camera and trigger structure	
Metallic stick	10 \$	Support for the camera	Broomstick, long selfie stick
LED strip	10 \$	Lighting of body	Professional photo equipment: flash, lights..
Tent poles	20 \$	Lighting structure	Professional photo equipment: flash, lights..

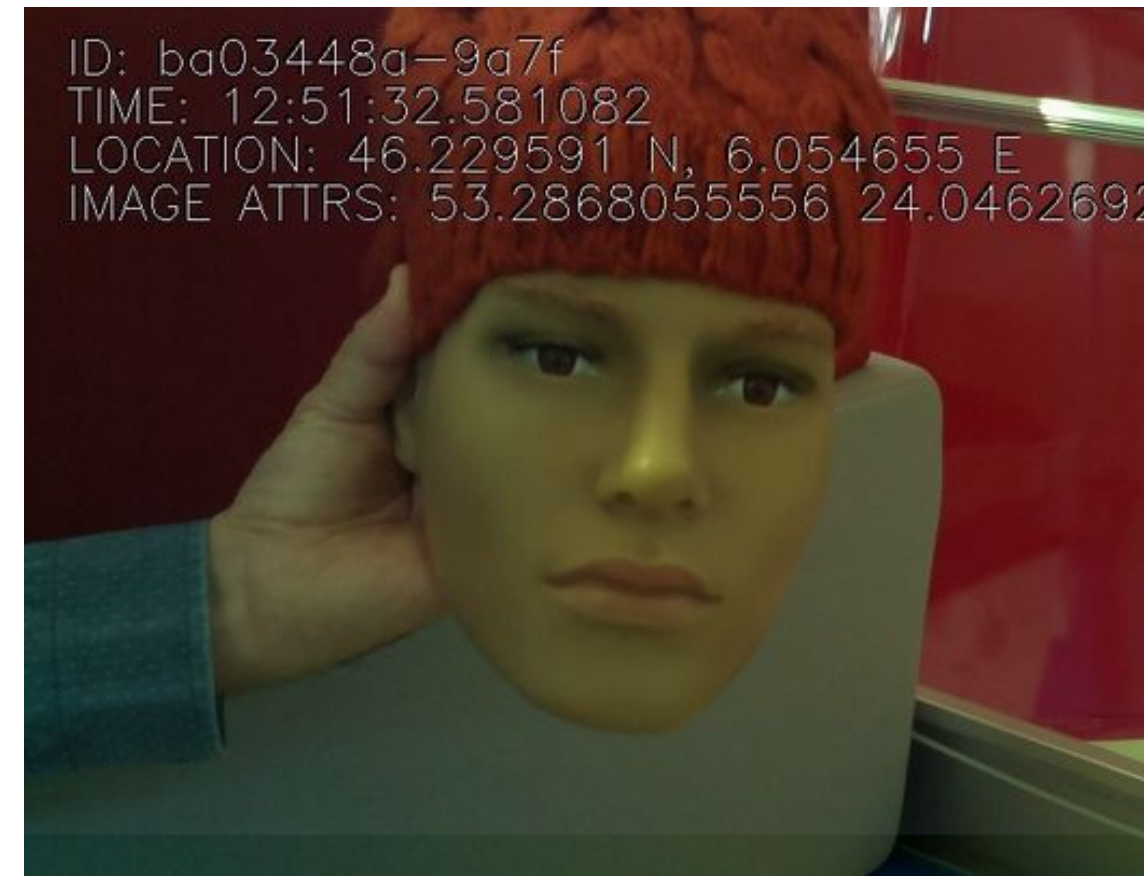
Total: < 100 \$

Instructions and material list available at  
<https://theportatcern.github.io/Hackathon2016-Pier37/>



# Future Ideas ...

- **Automatic matching** of forensic pictures against the picture provided by family members
- **Post-processing:** Auto-annotation of images with their detailed text description of body characteristics to expedite the documentation process followed by the forensic experts



# Post-Processing: Text extraction

Colonia San Juan - Team A-001

OR

Chaing Mai Hospital - P. Sribanditmongkol-001



[Using Google Cloud Vision API](#)

**A) Whole Face**



Colonia San Juan Team A-001  
OR  
Chaing Mai Hospital P. Sribanditmongkol-001  
ColoniaSanJuanTeamA-001ORChaingMaiHospitalP  
.Sribanditmongkol-001



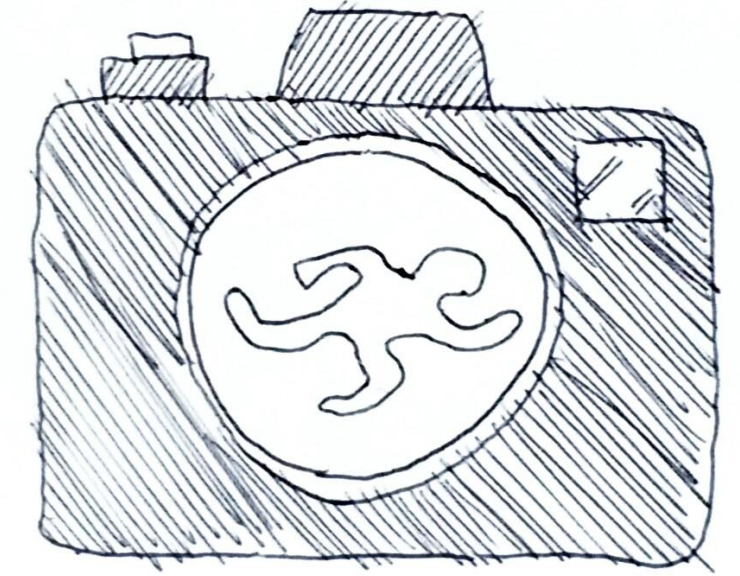
# Post-Processing: Auto-annotation



## Using Google Cloud Vision API

- Clothing
- Male
- Muscle
- Toy
- t shirt

# Thanks!



# Questions?

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