

REINFORCE : THE AI/ML CLUB FOR SST

presents

Gesture-Controlled Game Interface Build Day

Exploring the future of gaming with innovative gesture recognition
technology for intuitive gameplay.

Reinforce Interactive Experiences

Today's Agenda

Understanding the media pipeline and its role in gesture recognition technology.

Exploring hand and gesture recognition techniques that enhance user interaction in gaming.

Introduction to computer vision using OpenCV to analyze visual data effectively.

Delving into real-time gesture detection with MediaPipe for dynamic game control capabilities.

Mapping gestures to game controls and discussing their practical applications in real-world scenarios.

and some fun activities :))

Introduction to OpenCV



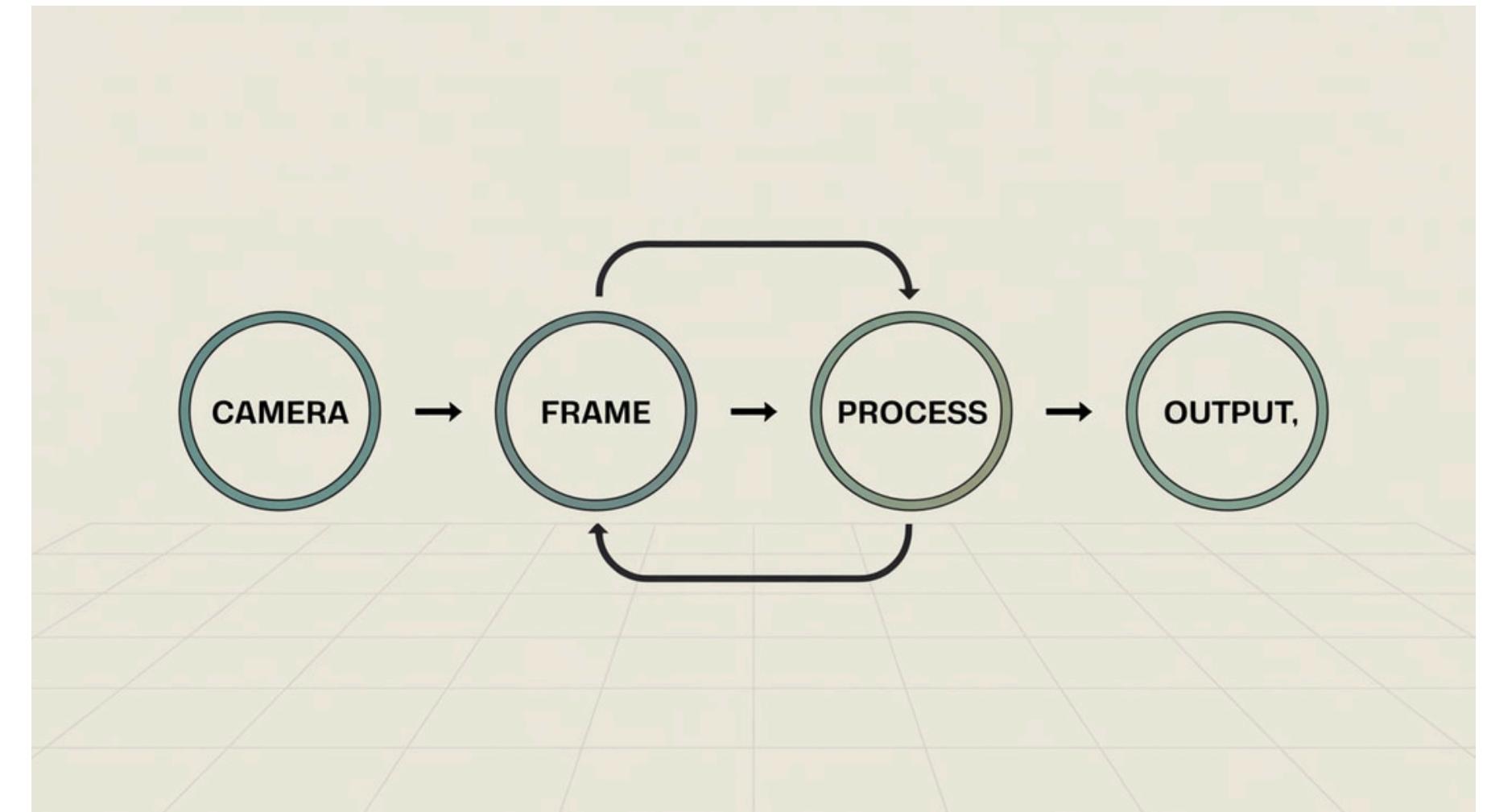
OpenCV

OpenCV is the world's biggest computer vision library.

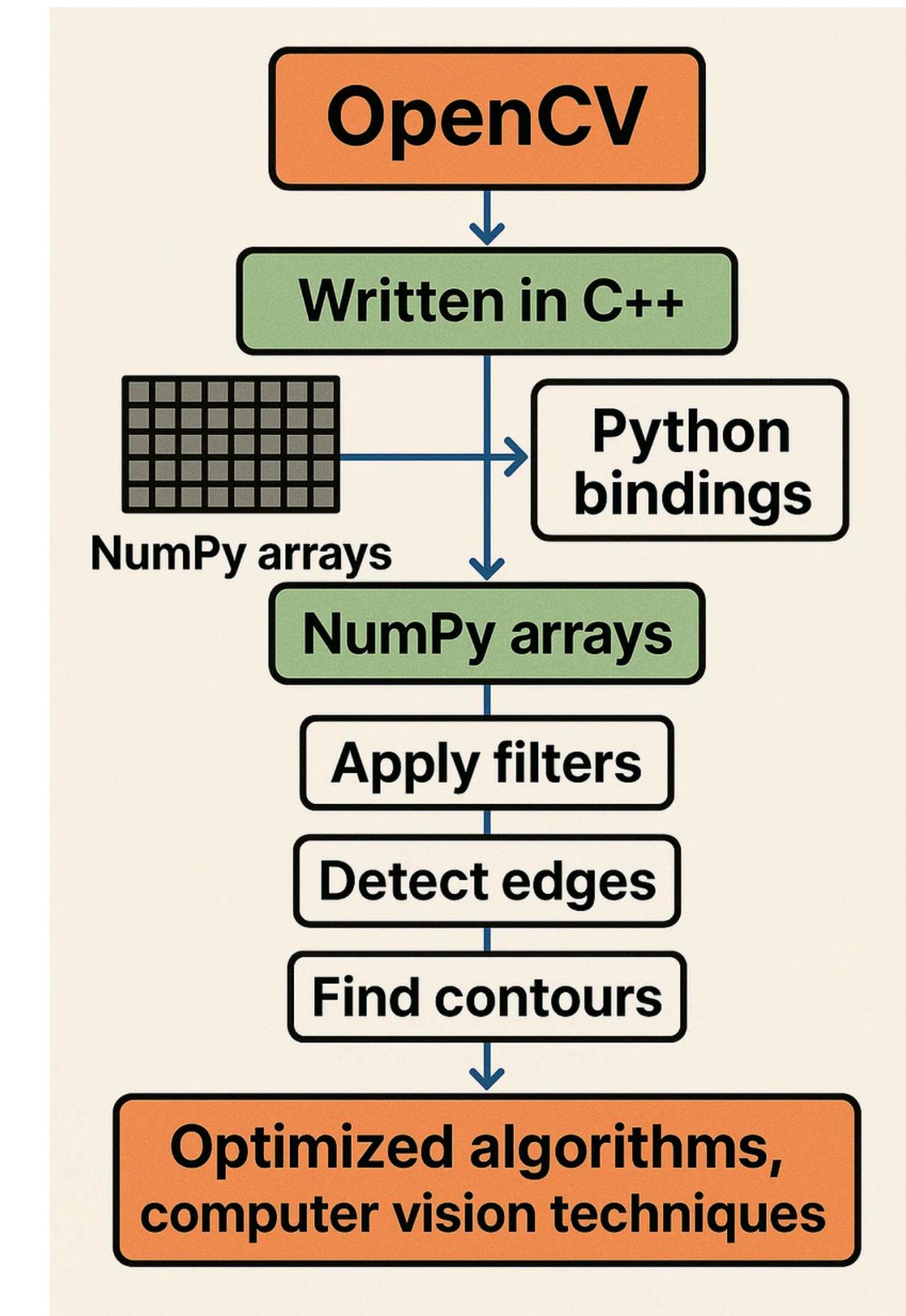
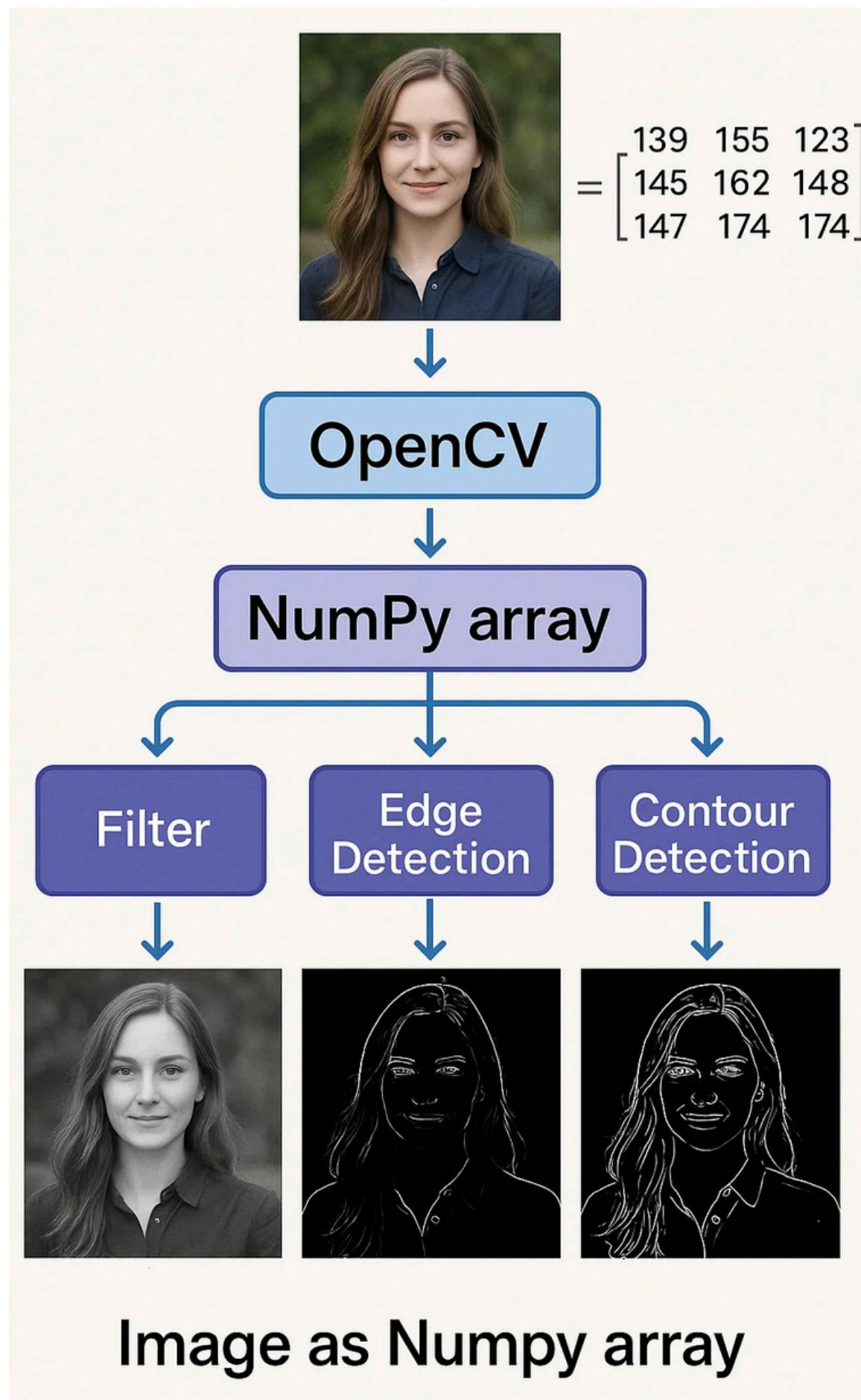
OpenCV is open source, contains over 2500 algorithms, and is operated by the non-profit Open Source Vision Foundation. Since June 2000.

What can OpenCV Do?

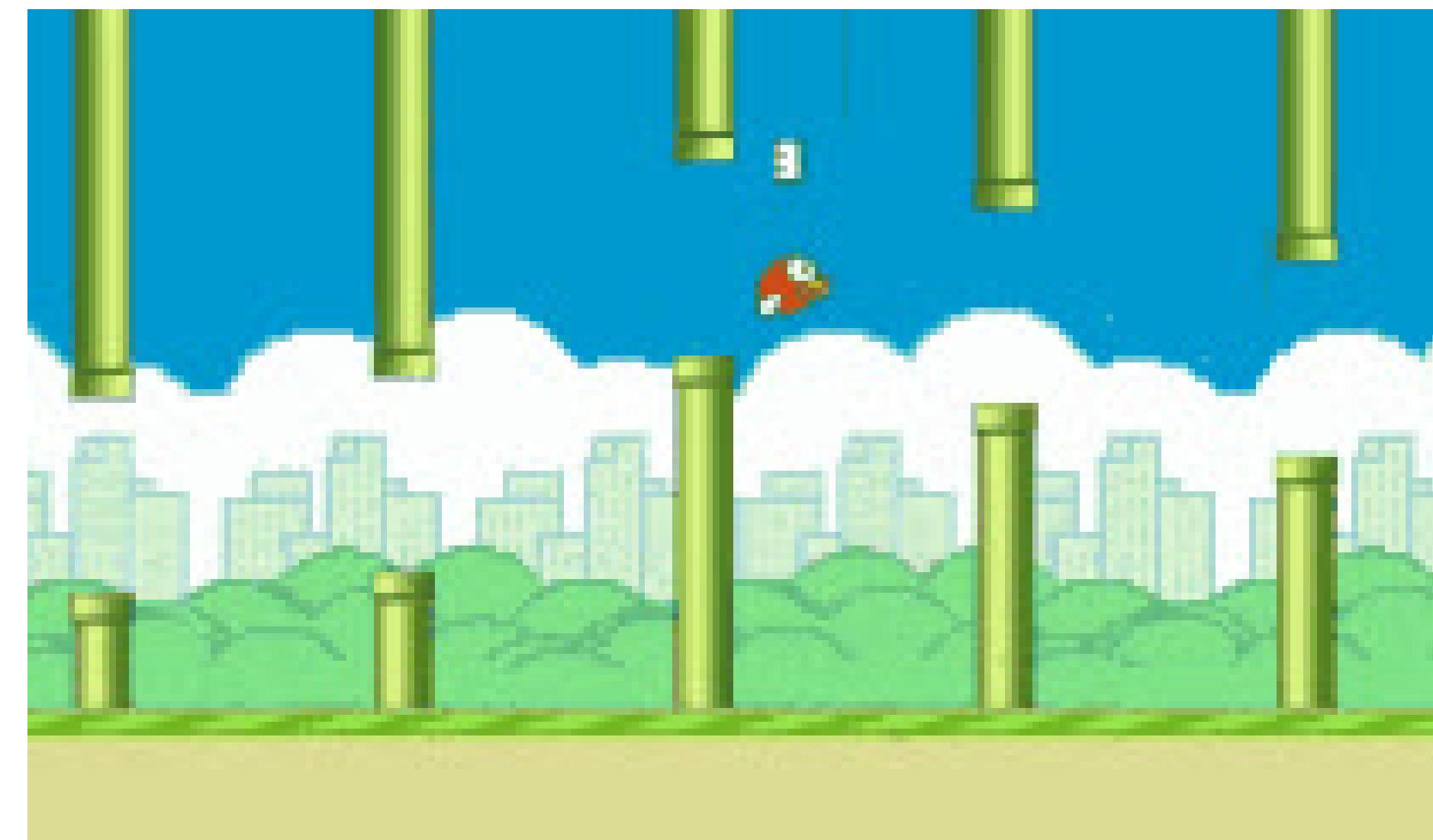
- Face & hand detection
- Image filters & effects
- Object tracking
- Contour detection
- Live video processing



Brief Overview on internal working of OpenCV

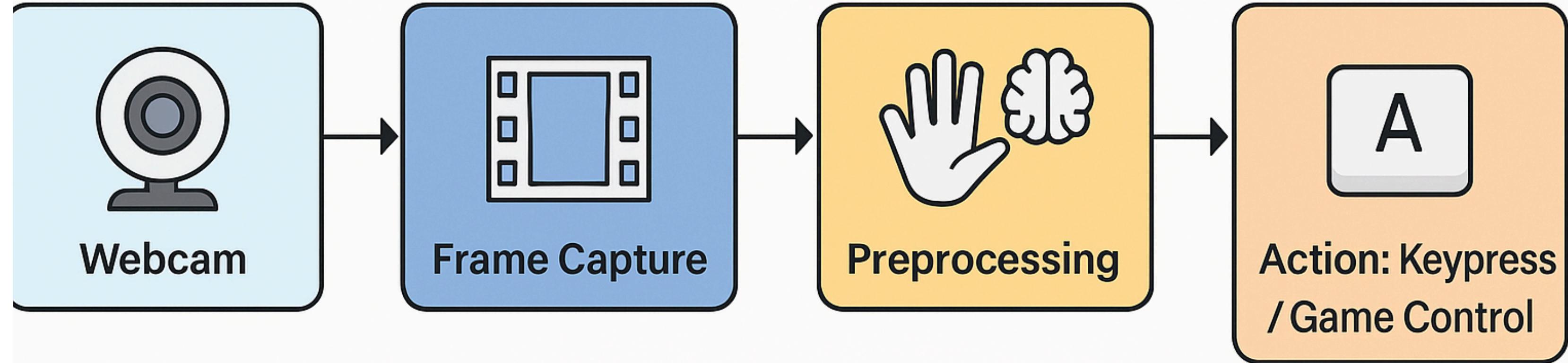


HOW ARE WE USING IT TODAY

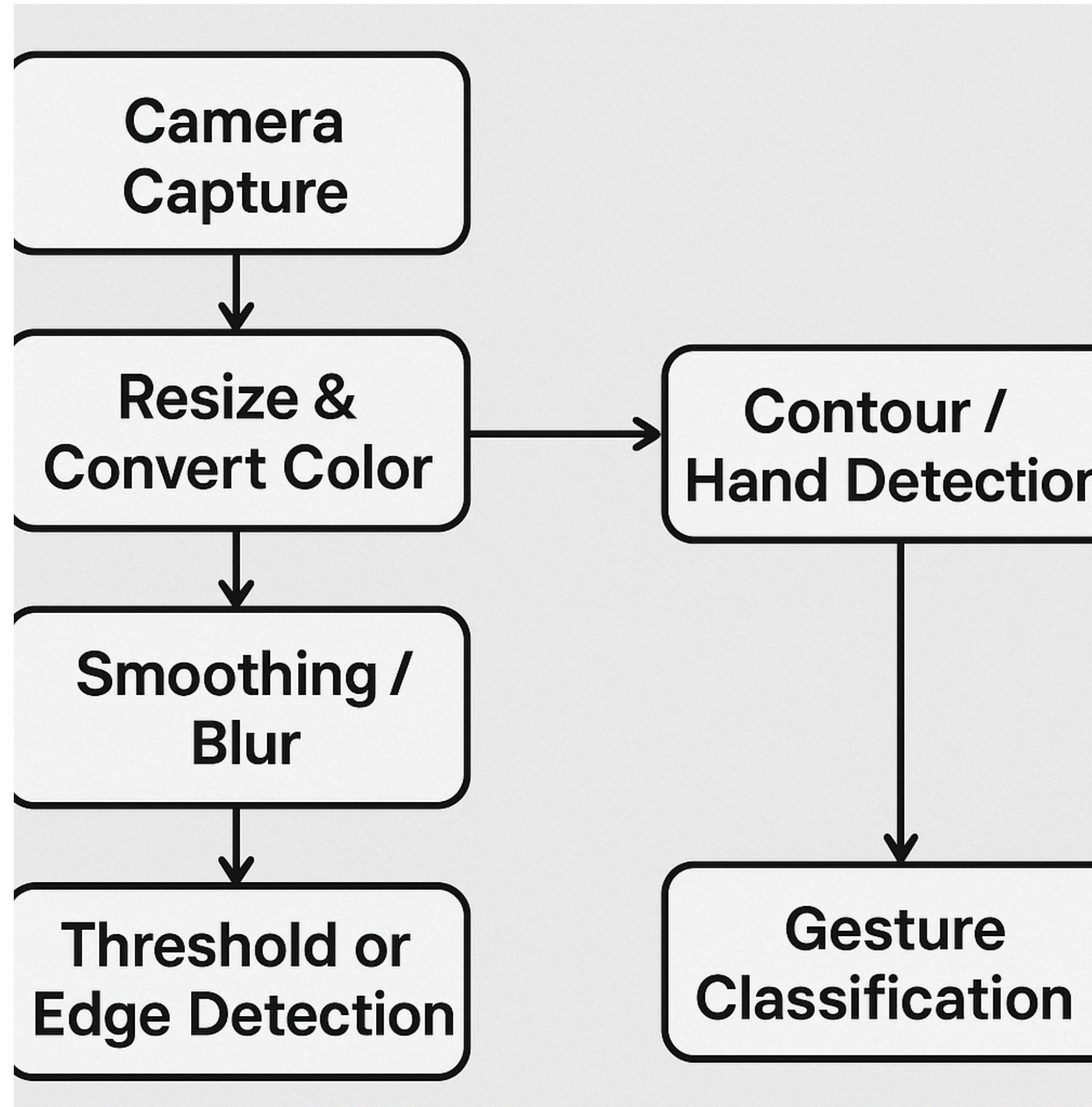


What is a Media Pipeline?





Live video is streamed, processed frame by frame,
and used to control outputs like games or apps.

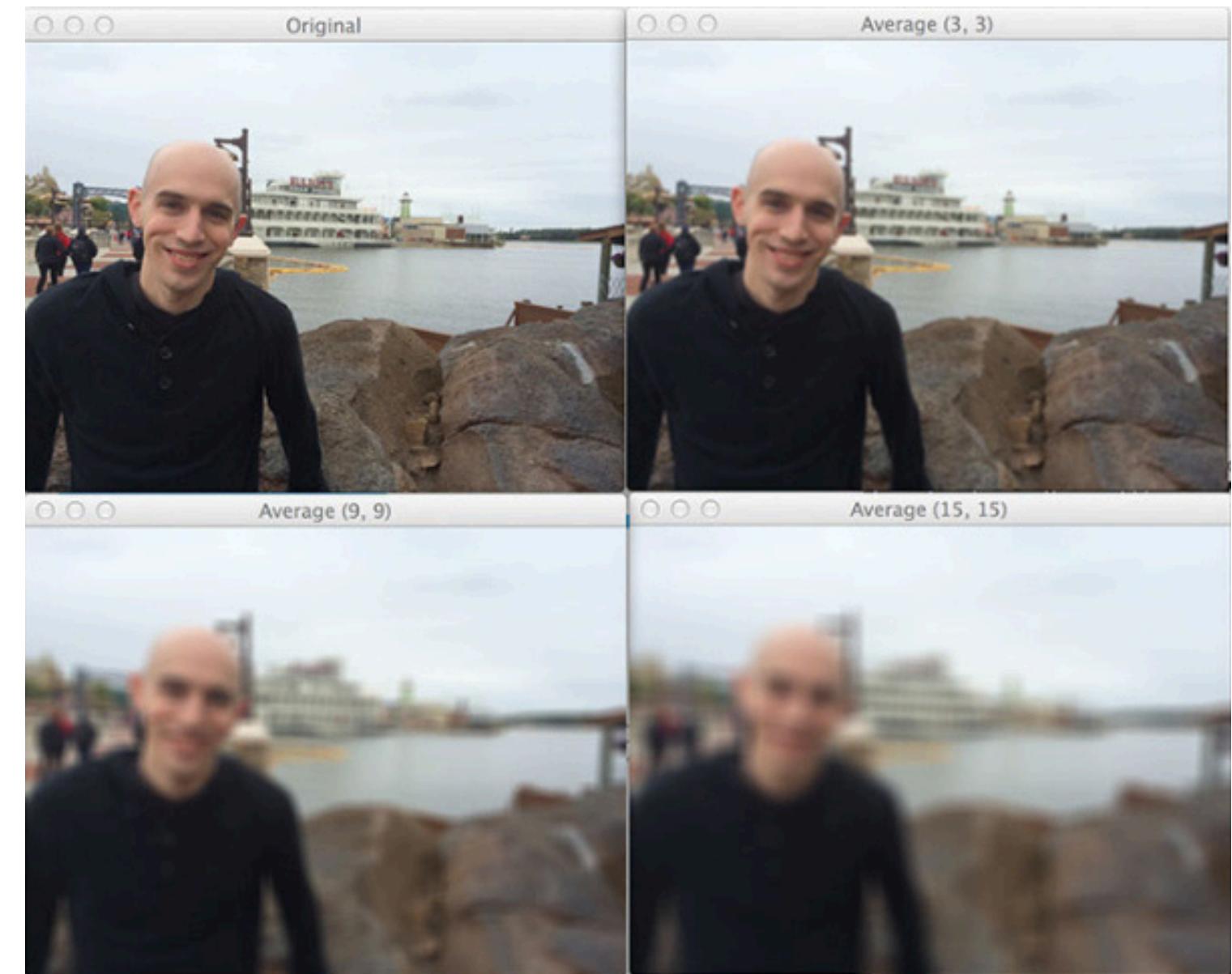


preprocessing





useful for detection algorithms



Techniques like Gaussian blur
reduce image noise.

(a)



(b)



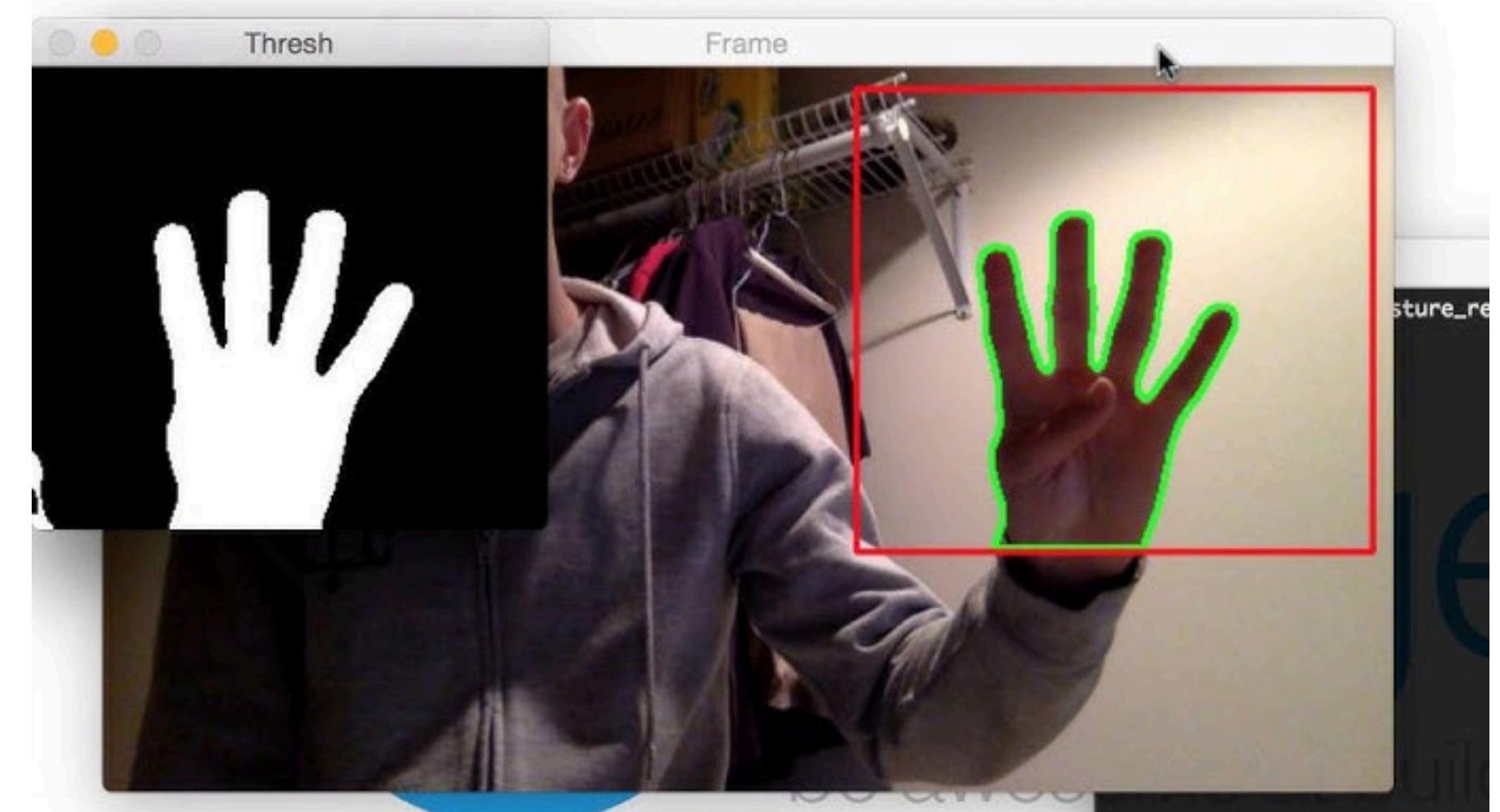
(c)



(d)



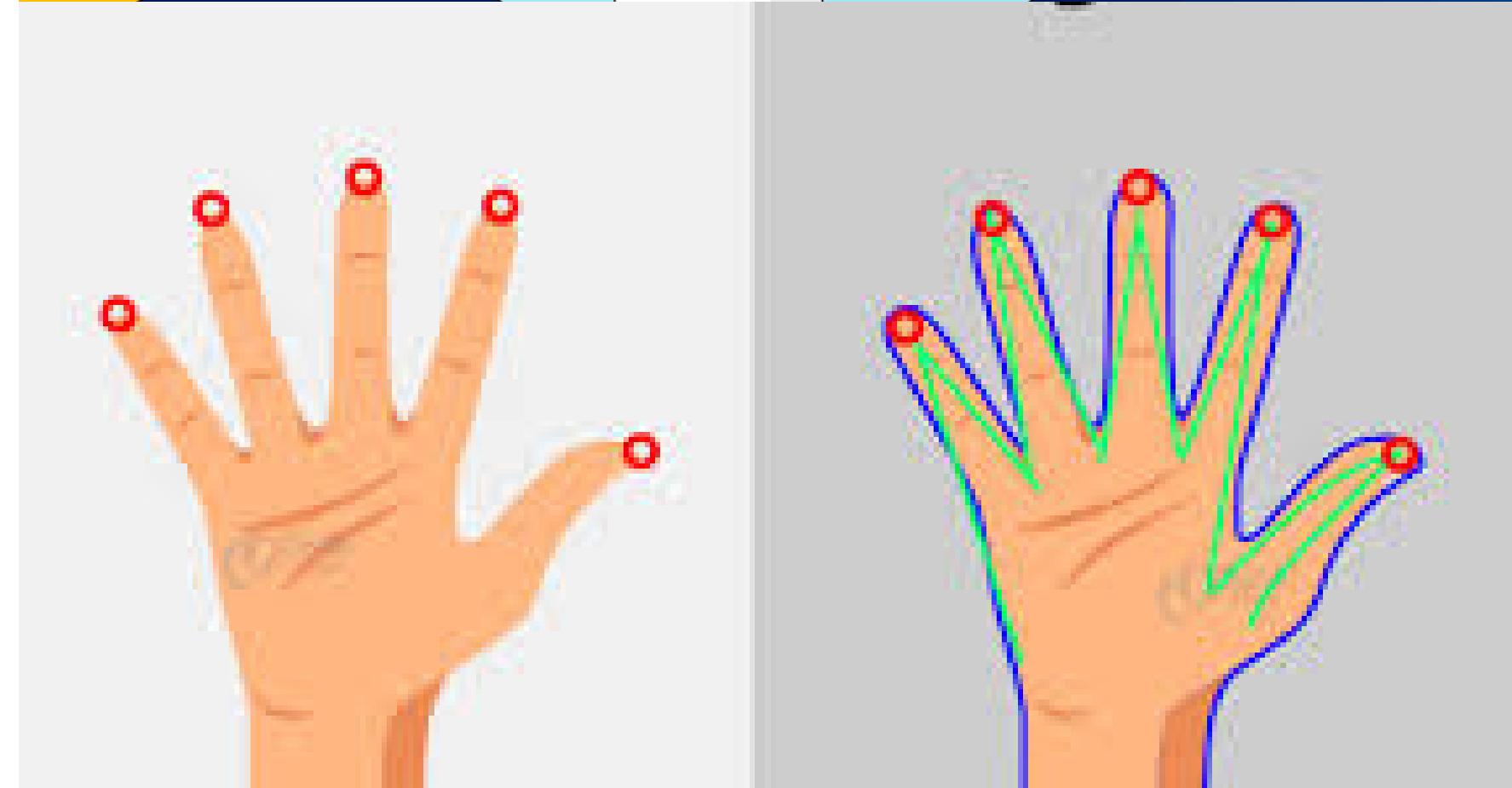
For clearer contours or gesture shapes.



Helps isolate hand region using
background subtraction or skin
color filtering.

Gesture Recognition

Gesture recognition refers to the ability of a system to interpret human gestures via mathematical algorithms. It plays a crucial role in enhancing user experience and immersion in gaming interfaces.

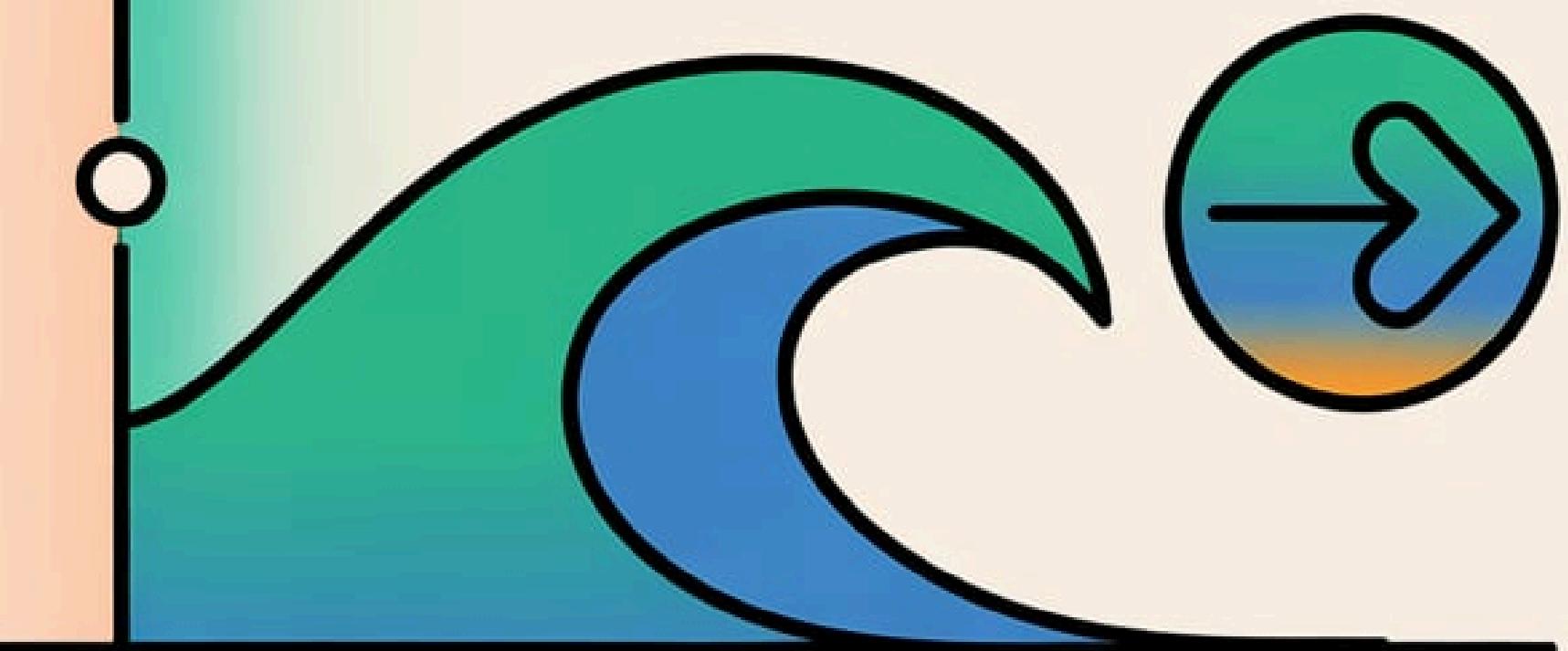




Static - Show Peace Sign, Thumbs Up



Dynamic - Show Wave, Swipe



TYPES OF GESTURES



static : like a snapshot



dynamic : like a gif

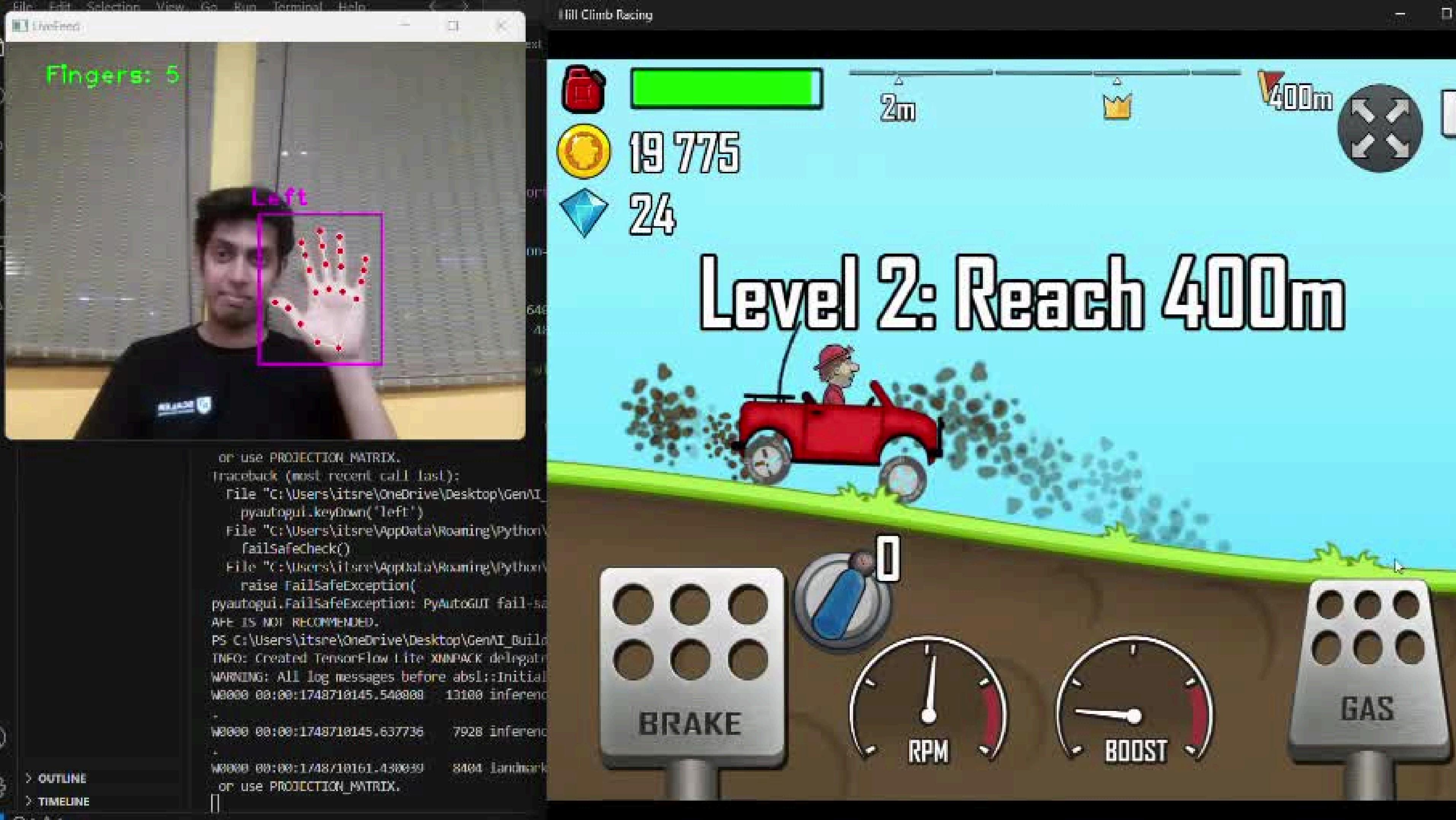


WHY DOES IT MATTER

- Touchless interfaces (post-COVID, hygiene).
- Accessibility for people with disabilities .
- Immersive gaming .
- AR/VR interaction .



DEMO



doubts?

dhanyawad & subhratri