A decorative graphic on the left side of the slide consisting of two overlapping parallelograms. The front one is blue and the back one is light green. They are positioned diagonally, with the blue one partially covering the green one.

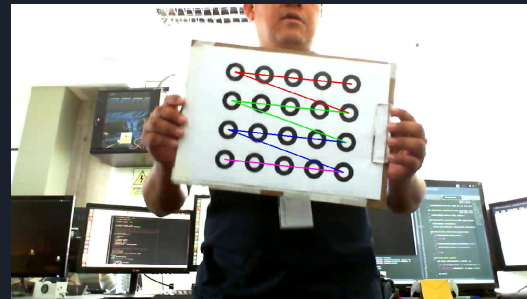
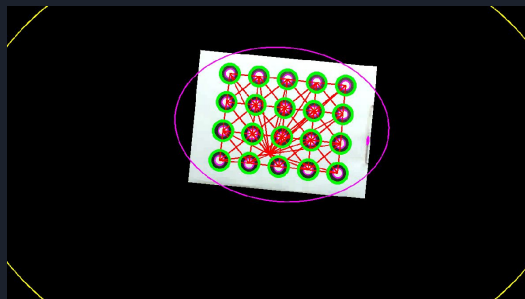
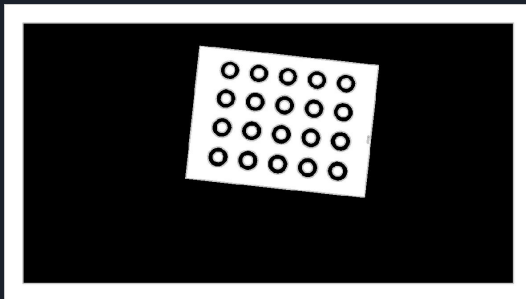
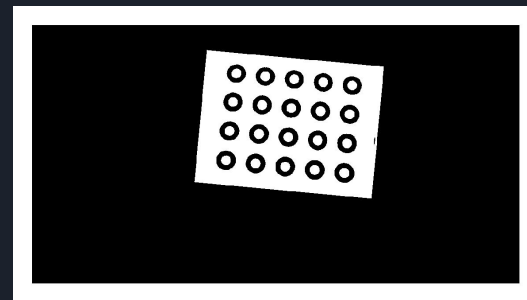
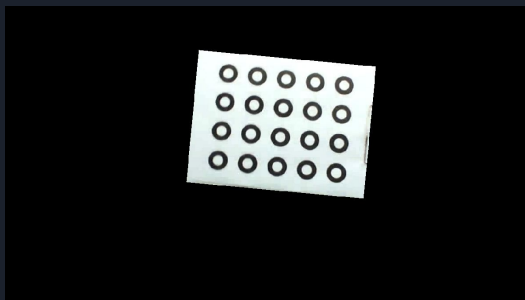
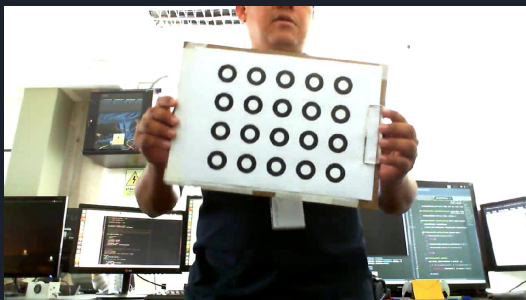
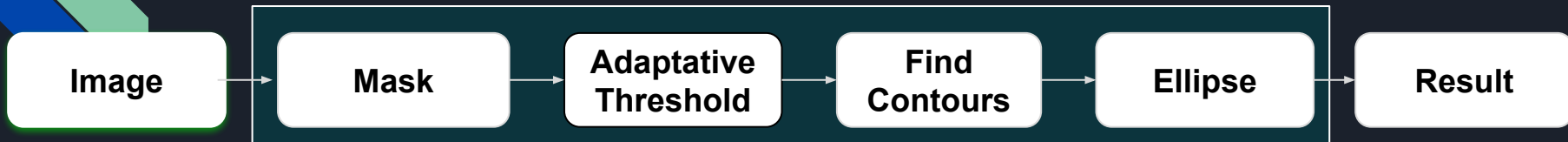
Camera calibration using adaptive segmentation and ellipse fitting

Authors:

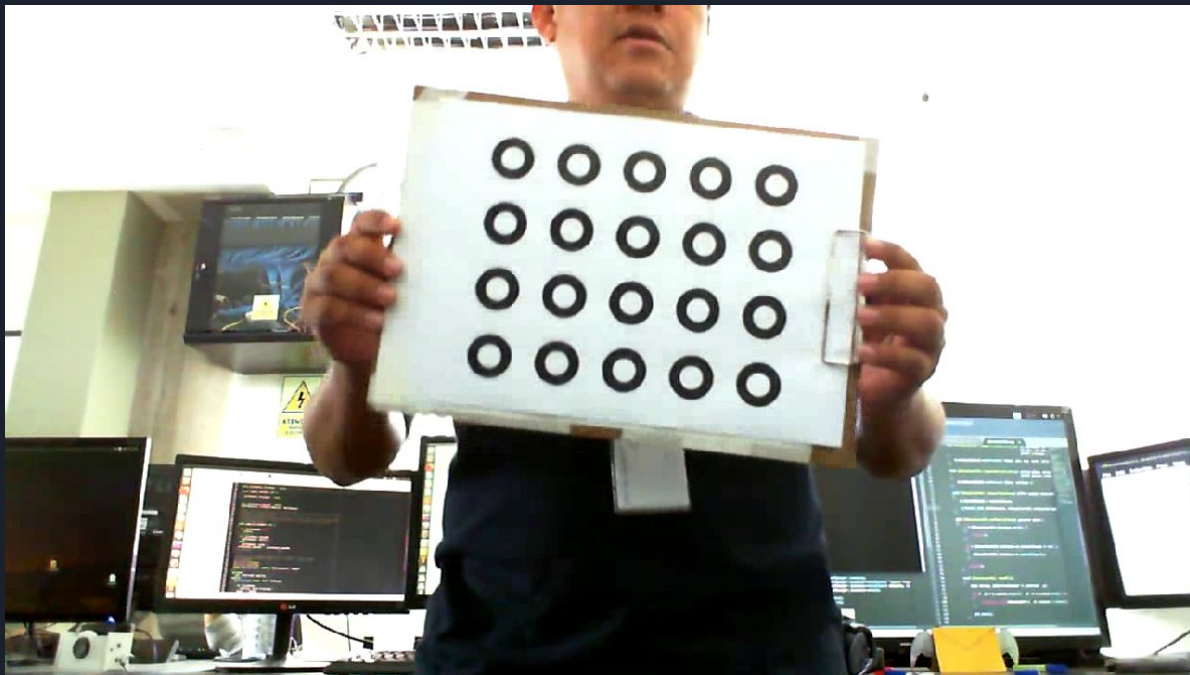
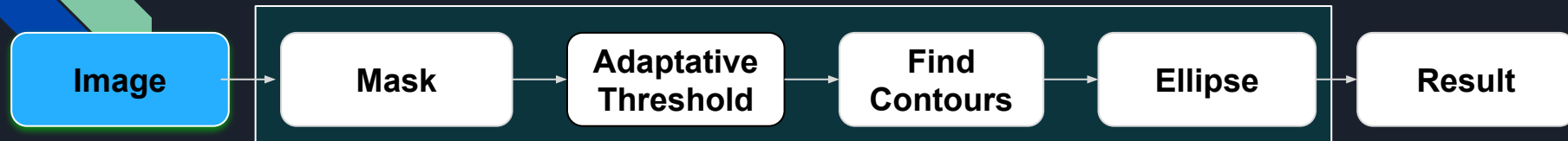
Raúl Romaní Flores

Paul Alonzo Quio Añamuro

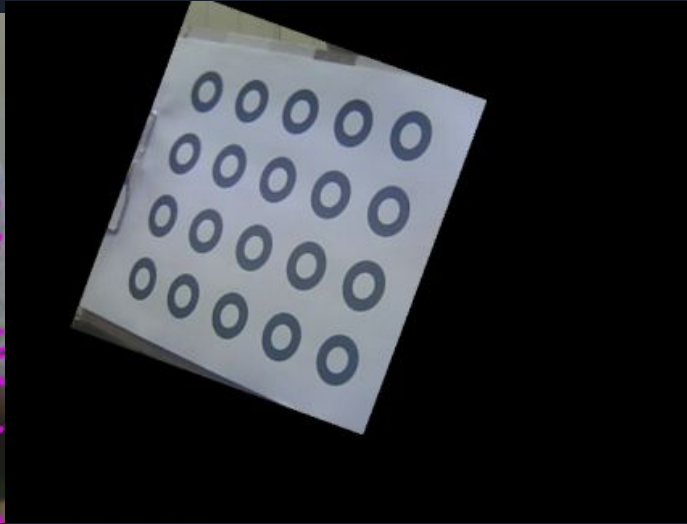
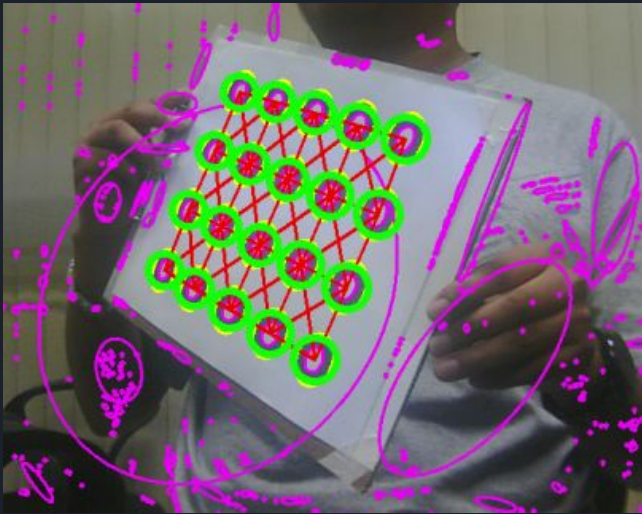
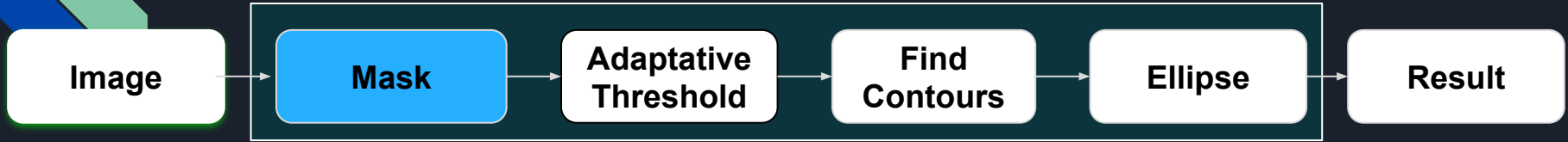
Workflow



Workflow

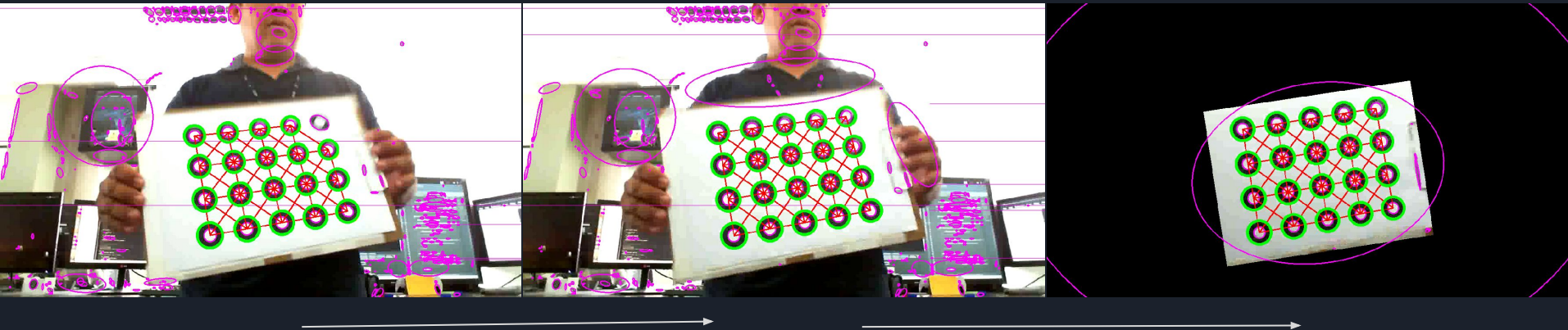
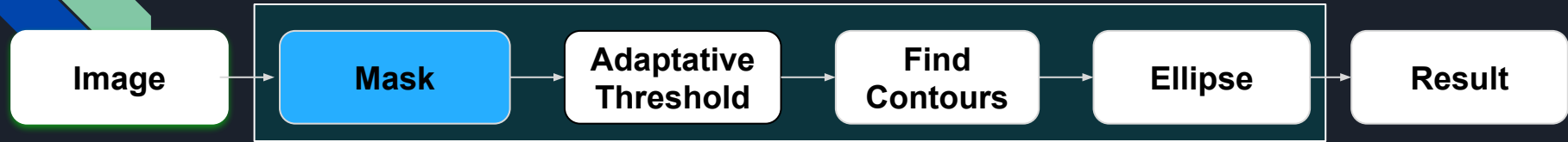


Workflow

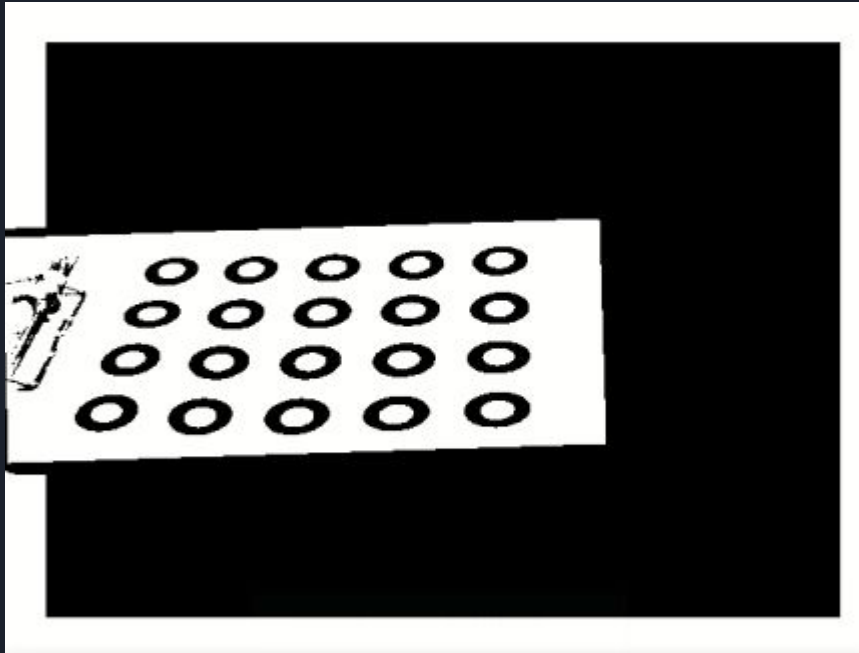
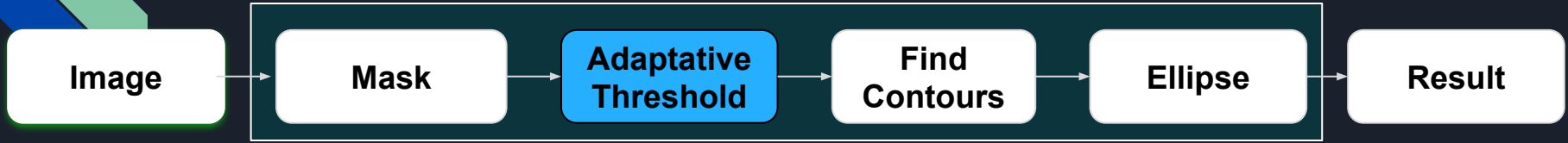


- minAreaRect (matrix of 20 points)
- Crear mascara a partir del área.

Workflow

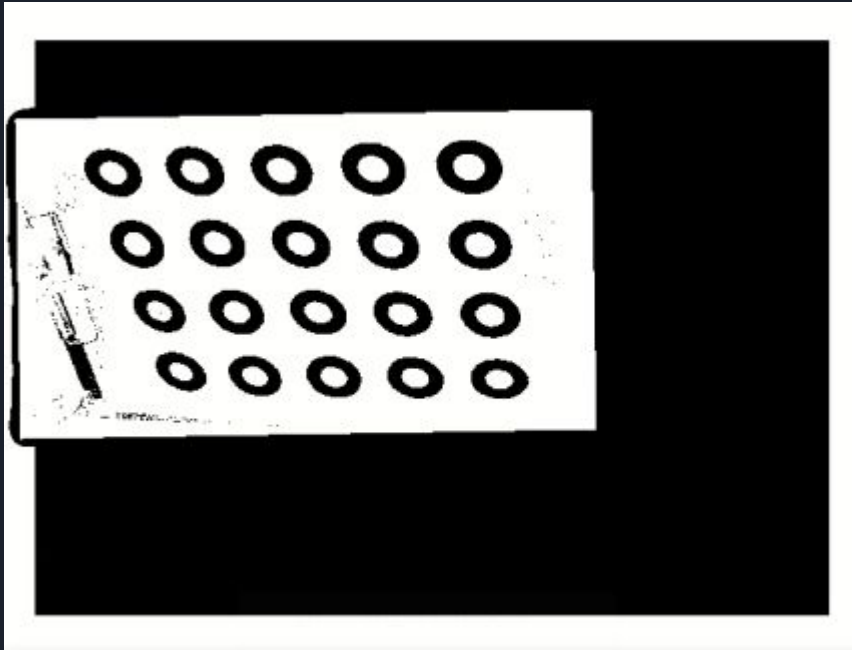
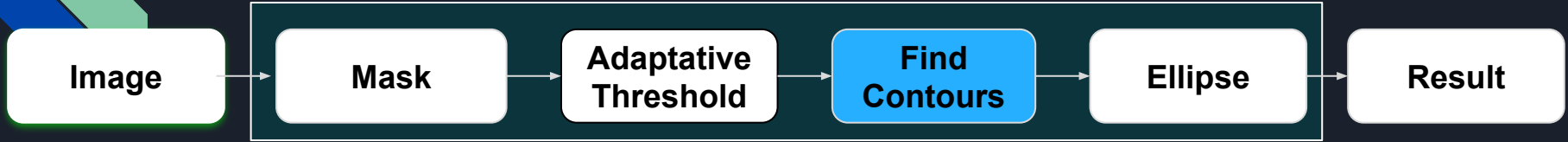


Workflow



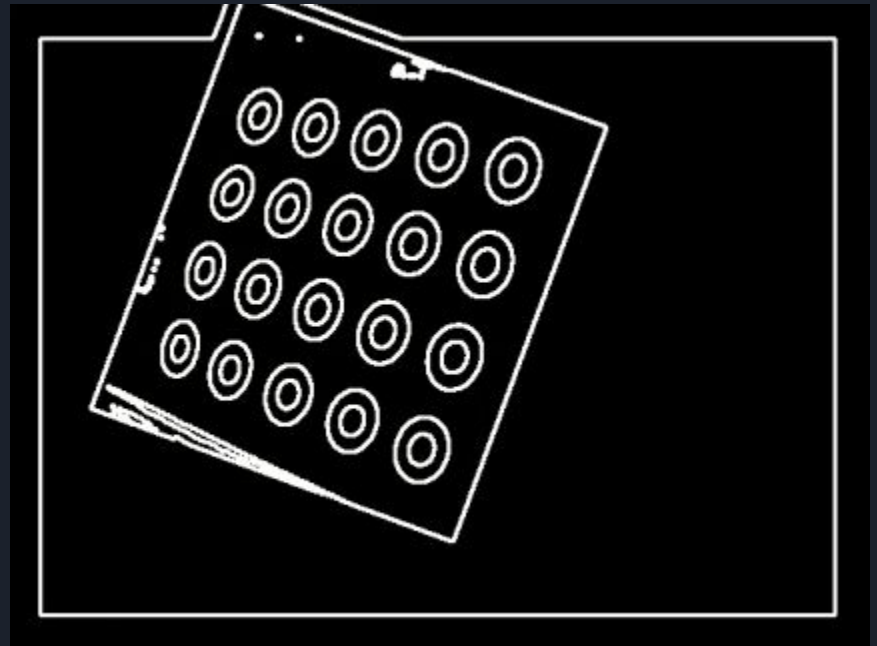
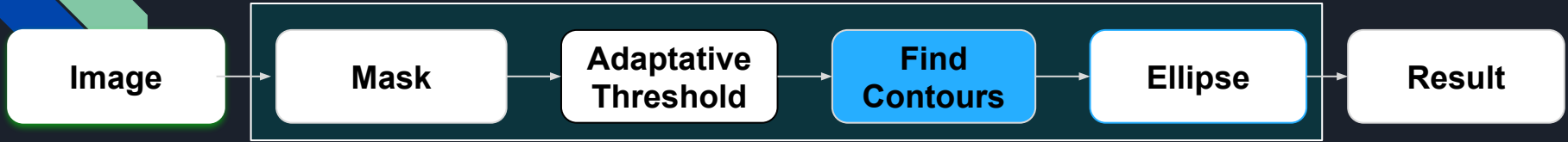
- `adaptiveThreshold` - (opencv)
- segmentation (Integral image based)

Workflow

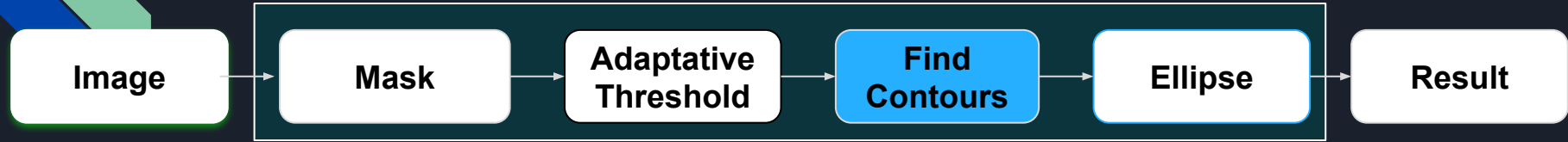


- La elipse tiene que tener un padre y un hijo
- $\text{radio} = (\text{width} + \text{height}) / 4$
- La distancia euclidea entre el padre e hijo $<$ radio del hijo / 2

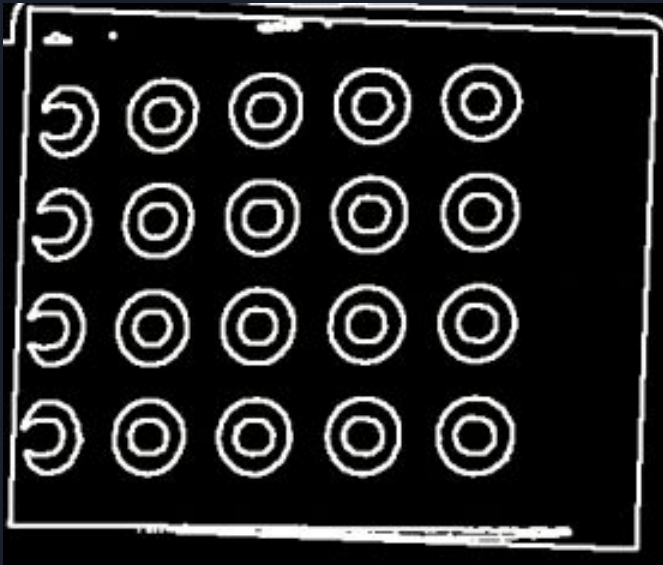
Workflow



Workflow

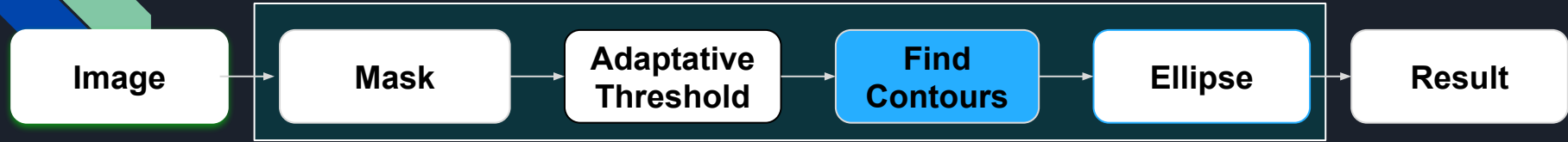


Problemas

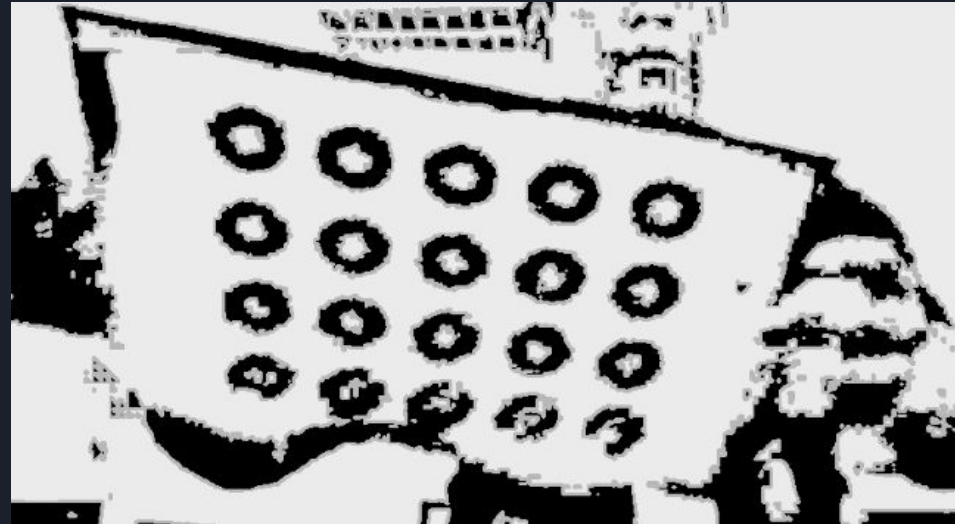
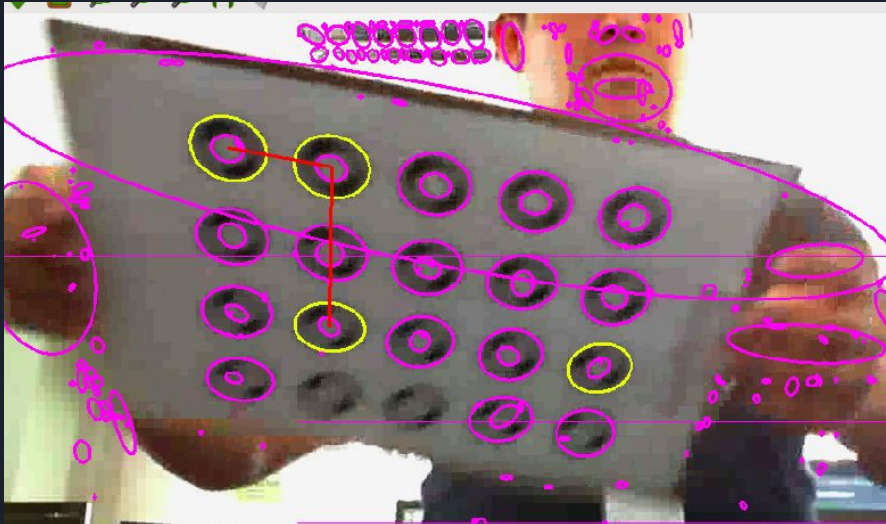


- A veces no se detectan los contornos de los hijos
- ruido

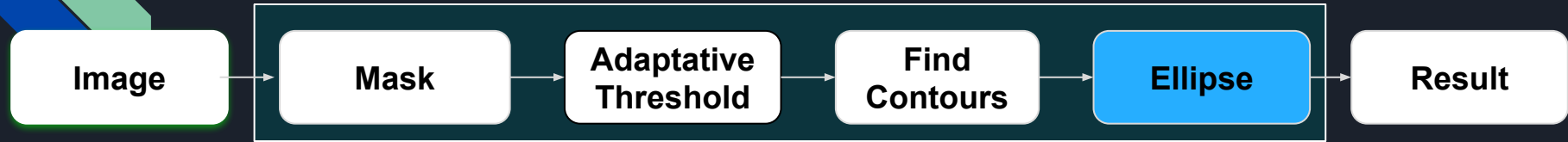
Workflow



Problemas

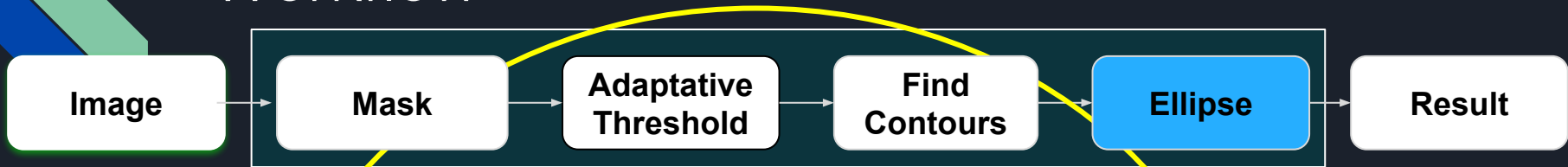


Workflow



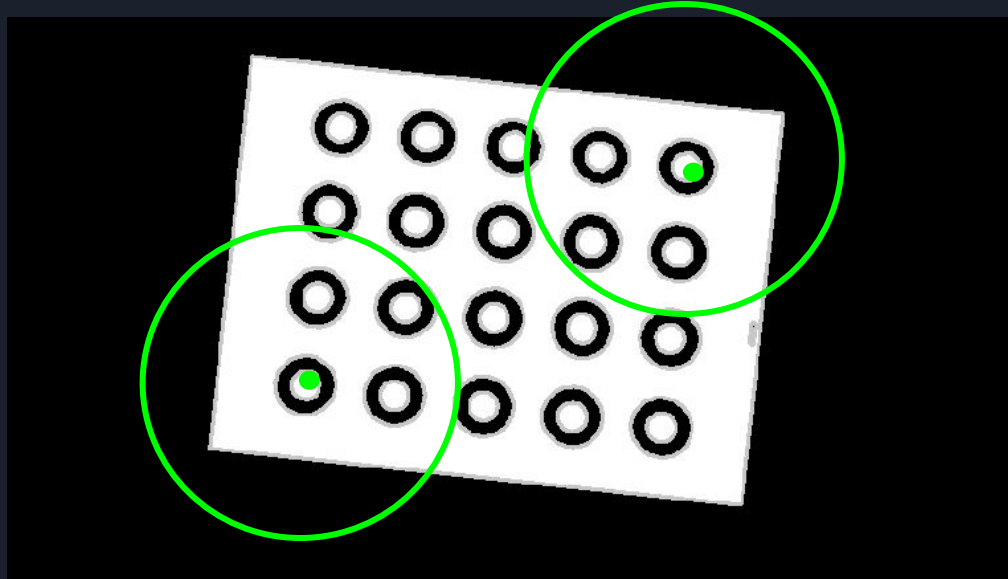
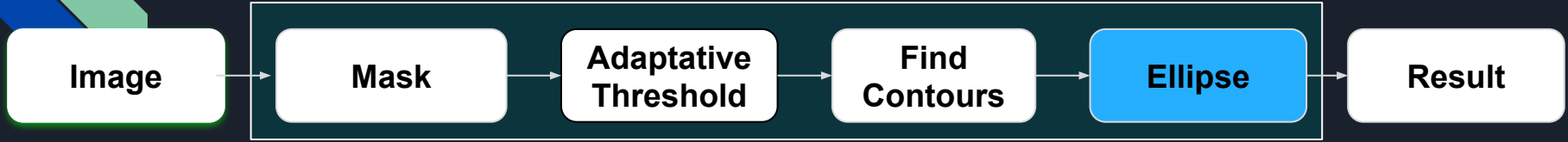
- La elipse tiene que tener un padre y un hijo
- $\text{radio} = (\text{width} + \text{height}) / 4$
- La distancia euclideana entre el padre e hijo $< \text{radio del hijo} / 2$

Workflow



- Todos contra todos
- $\text{distancia}(c_1, c_2) < 5 * \text{radio}_2$
- Si se tiene mayor igual a 2 puntos que cumplen la condición considerarlos

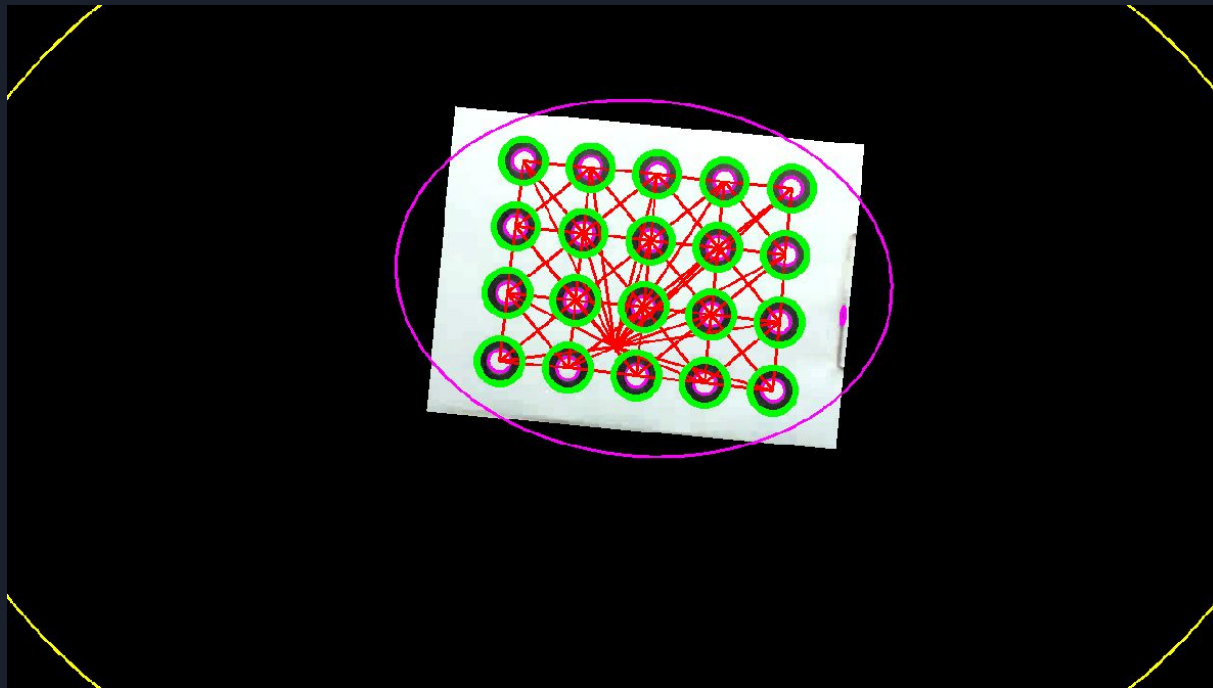
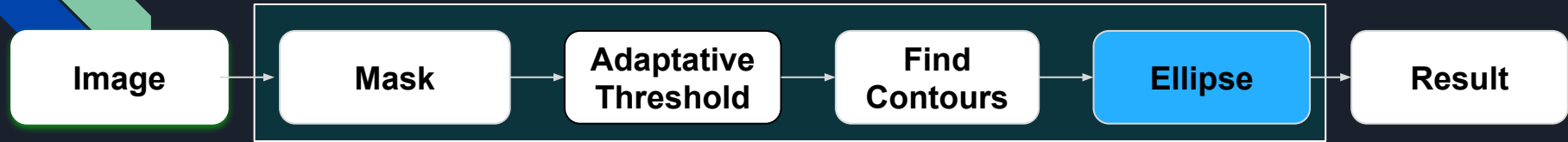
Workflow



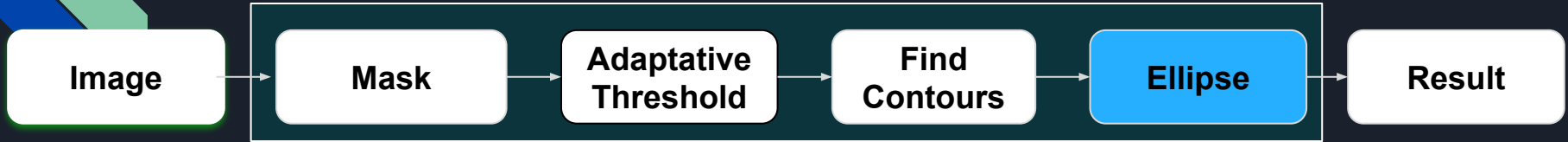
- Todos contra todos
- $\text{distancia}(c_1, c_2) < 5 * \text{radio}_2$
- Si se tiene mayor igual a 2 puntos que cumplen la condición considerarlos



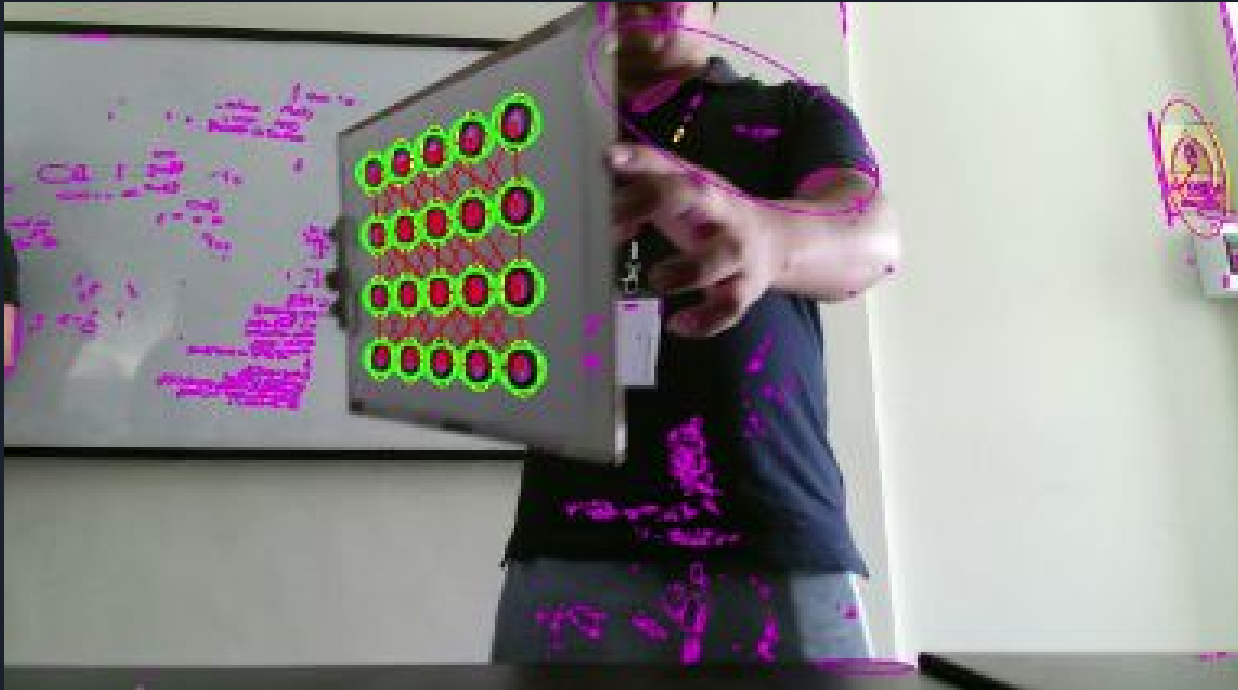
Workflow



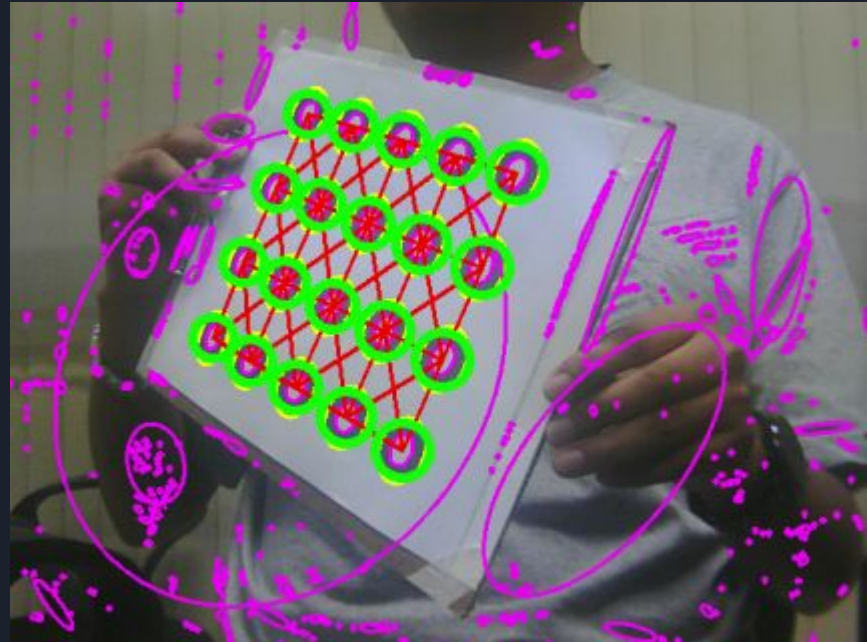
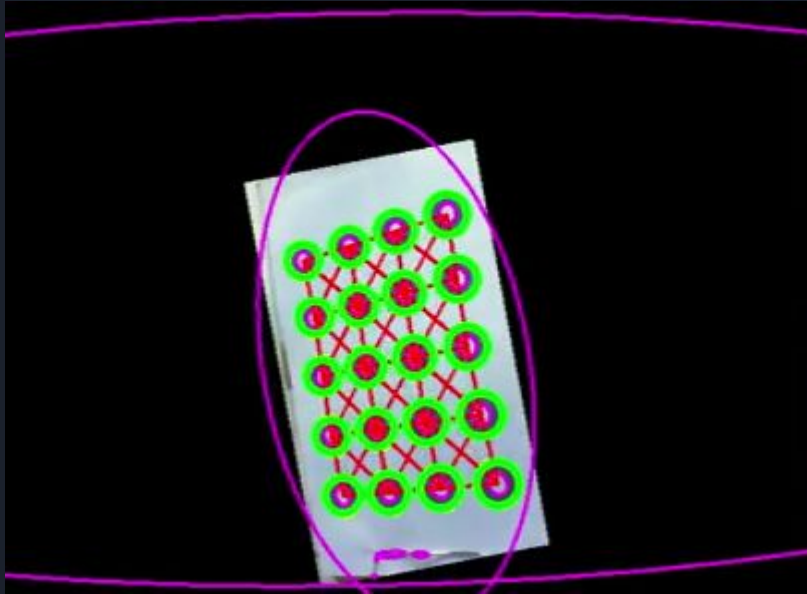
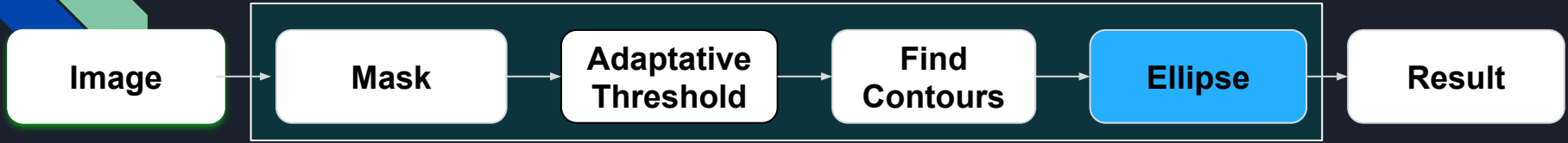
Workflow



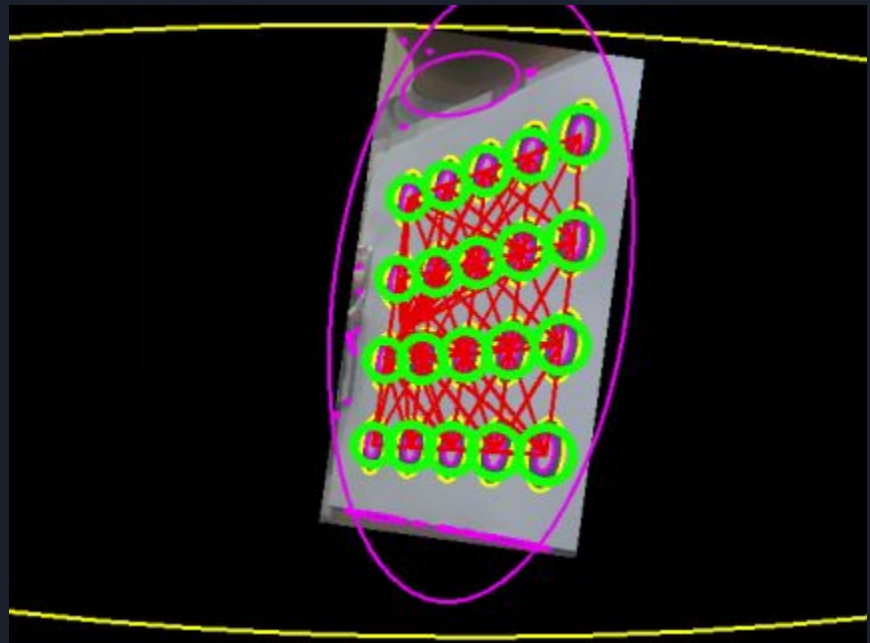
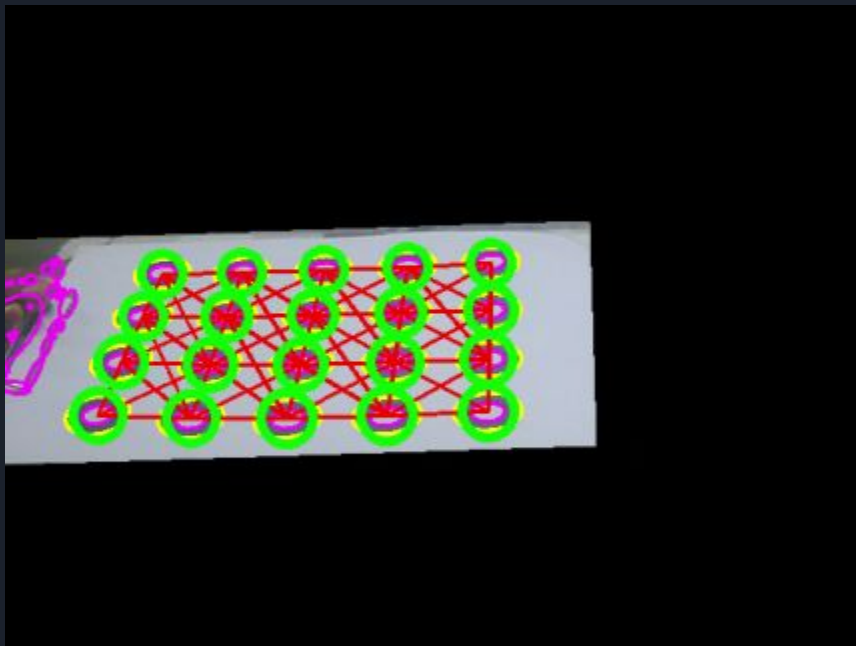
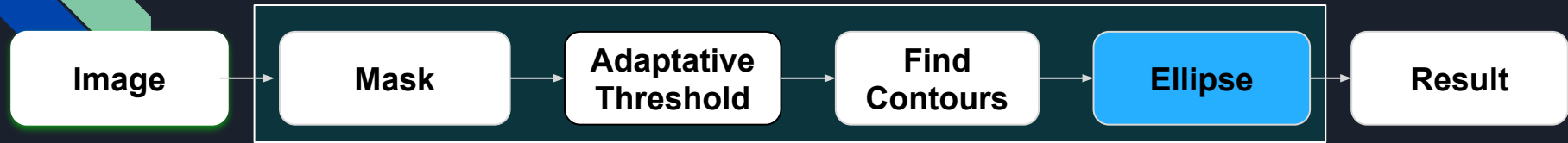
MODA



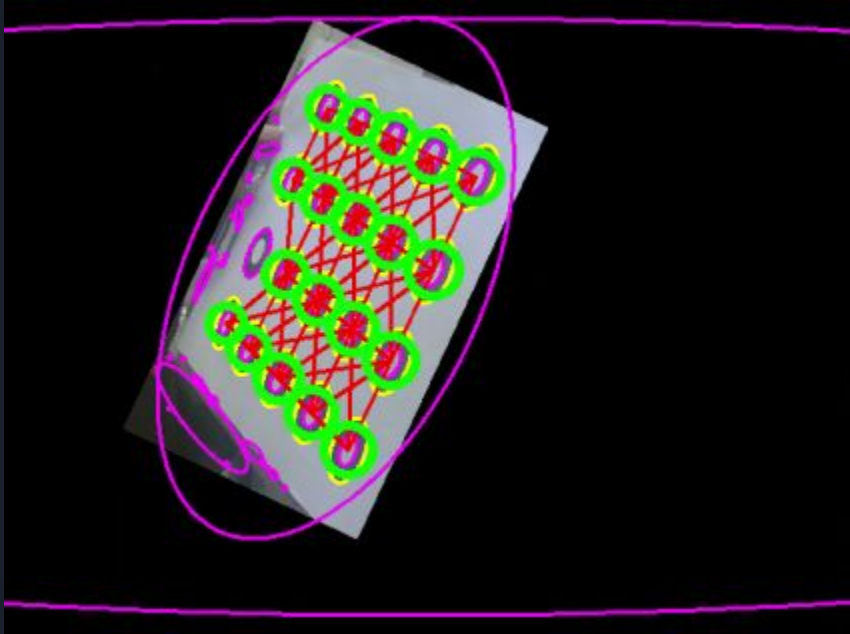
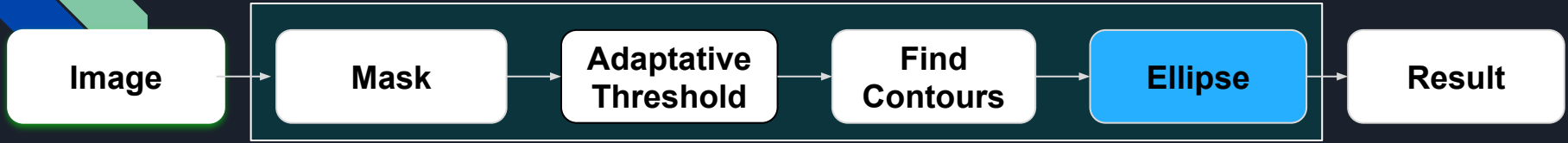
Workflow



Workflow



Workflow



Workflow

Image

Mask

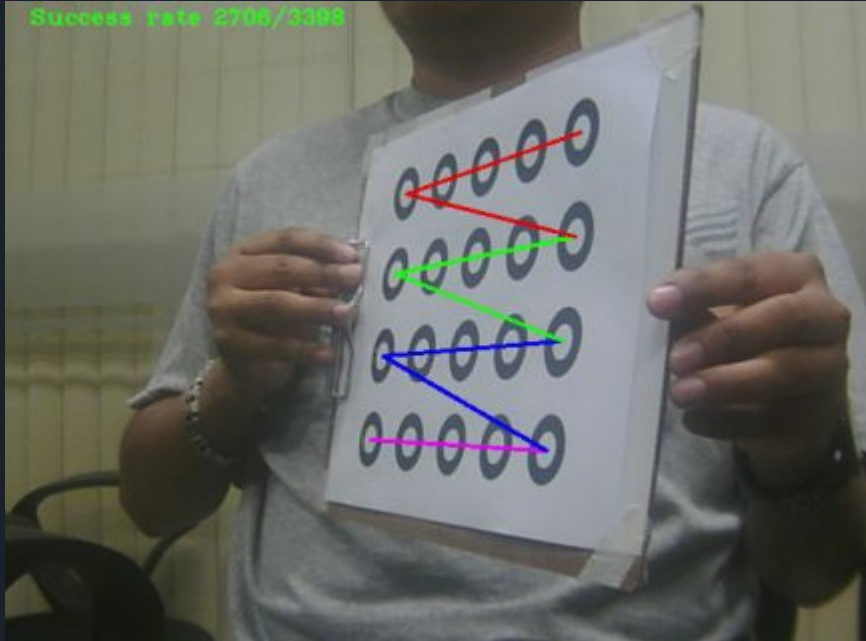
Adaptative
Threshold

Find
Contours

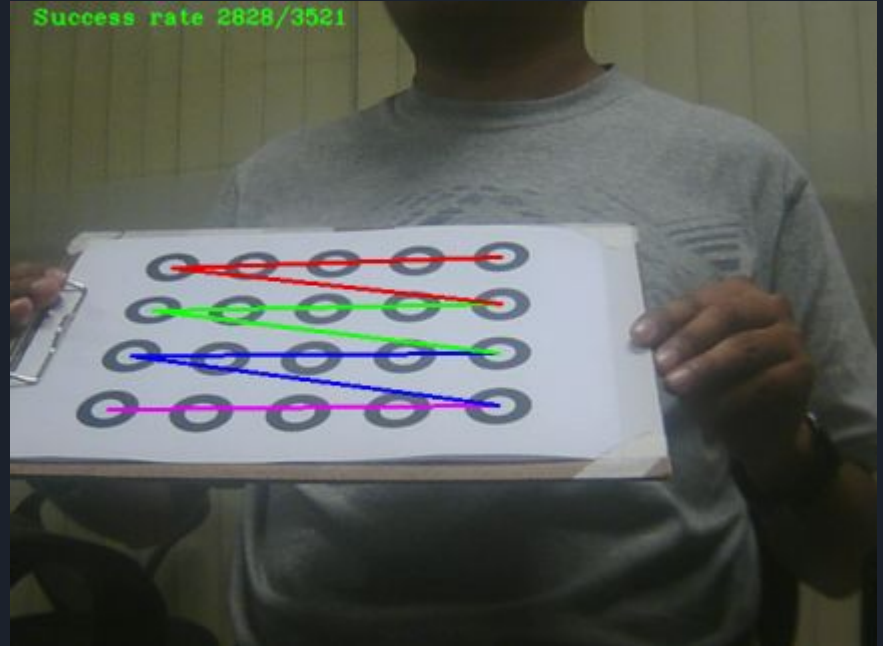
Ellipse

Result

Success rate 2705/3398



Success rate 2828/3521





Camera PS3

30 FPS

<https://drive.google.com/open?id=1wUeY3zW0K2aycAoXbjUi7HhZzZGcq7bS>

60 FPS

<https://drive.google.com/open?id=1rWALFVr-KSTzALI6PLg3pEWepqTL998N>



Thanks