import cv2

import numpy as np

cap = cv2.VideoCapture('path\_to\_your\_video\_file.mp4')

prev\_frame = None

initial\_frame = None

pixel\_to\_meter\_ratio = 1

while cap.isOpened():

ret, frame = cap.read()

if not ret:

break

gray = cv2.cvtColor(frame, cv2.COLOR\_BGR2GRAY)

if prev\_frame is not None:

flow=cv2.calcOpticalFlowFarneback(prev\_frame, gray, None, 0.5, 3, 15, 3, 5, 1.2, 0)

magnitude, angle = cv2.cartToPolar(flow[..., 0], flow[..., 1])

speed = np.mean(magnitude) \* pixel\_to\_meter\_ratio

print(f"Estimated speed: {speed} meters per frame")

prev\_frame = gray.copy()

cv2.imshow('Frame', frame)

if cv2.waitKey(1) & 0xFF == ord('q'):

break

cap.release()

cv2.destroyAllWindows()