

# AUTOMATED SWIMMING ANALYSIS

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DEMO



## INTRODUCTION

Traditionally, measuring swimmer velocity required attaching cables or sensors to the athlete, which made setup complex and data analysis time-consuming. Underwater occlusions from splash and refraction make this even harder. With the help of machine learning, I have created a semi-automatic, professional-grade analysis tool

The goal is to make swimming analysis faster with machine vision techniques using SOTA detection model.

## KEY FEATURES

**Automatic analysis:** automatic speed calculation per frame from single video source

**Video rendering:** Custom-created video analysis with desired variable for convenient showcase

**Intelligent Model Usage:** RF-DETR, current SOTA detection model analyses 3 datapoints: swimmer, vertical markers, horizontal markers.

**Scalable ML Processing:** Intensive detection tasks could be parallelised for mass analysis (future work).

## HOW DOES IT WORK?

Simply upload a video, and calibrate the points. Then system automatically analyses the video.

The calibrated video is processed by the detection model, producing per-frame detection data

Graph creation for in-depth analysis derived from the hip enabling advanced biomechanical insight

## OUTPUTS OF THE PROGRAM

