



# Inter IIT Tech Meet 11.0

IIT Kanpur



Cloudphysician

● Mid Prep

# Cloud Physician - A Smart-ICU Platform

- **The Vital Extraction Challenge**

- Monitoring a patient's vitals, such as heart rate, blood pressure, and oxygen level.
- According to the current guidelines, the nurse-to-patient ratio is 1:6, however, in the real world, the situation is much worse.
- Need for an automatic monitoring system running in the cloud that can log the data directly to the observing nurse/ physicians for better response time.



# Dataset

- **Monitor Segmentation**

- A dataset containing the segmentation boundaries for the monitors in the image, a total of 2000 images.



- **Classification**

- Contains annotated data of 4 types of patient monitors from 4 different hospitals.



- **Unlabelled Dataset**

- Contains unlabelled data (only images) from miscellaneous hospitals.



# Flowchart



Screen Segmentation using YOLO v7 by detecting corners of the screen

Perform a homography transform to correct the perspective

Bounding Box detection of Vitals (HR, SpO2, DBP, SBP, RR, HR Waveform) using object detection frameworks trained on dataset.

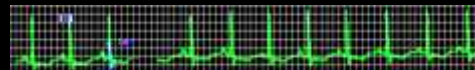
Current approach: YOLOS ViT based detector to capture the global context data in the image

Pass cropped Bounding Boxes of vitals to custom-OCR model

Output as integer values of different vitals

Pass cropped Bounding Box of Heart-rate waveform to HR Digitization model

Digitized HR Waveform with Grid



# Results

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