PROBLEM STATEMENT 07:

Innovative Monitoring System for TeleICU Patients Using Video Processing and Deep Learning

Category: Artificial Intelligence, Machine Learning, Deep Learning, Healthcare, Video Processing

Participants: 5th-8th Semester Students

Prerequisites:

- Concepts in Machine Learning, Video Processing
- Programming Skills (Python)
- Deep Learning - Train/Validate/Test with Data

Description:

TeleICU is concept for monitoring ICU patients from remote locations to reduce the burden of on-site intensivist. Currently there are multiple products available in this domain where one profession seating at remote location physically monitors one or two remote patients in TeleICU. The proposed solution should work to reduce the burden of remote health care professional so, one remote health care professional can monitor 5 or more patients at single time.

Major Challenges:

1. Creation of dataset containing ICU patients' images or videos.
   - Source: there are few Hollywood series on this where we can video of ICU setup.
2. Video processing work is important as captures footage will be of very high quality and real time analysis of that image is required.
3. Error margins need to be very small: as we are dealing with ICU patients, we need to have very narrow error margin.

Outcomes:

- Train a new deep learning model to identify various people in the ICU Room e.g. nurse, intensivist, family member, patient etc.
- Train a new deep learning model to identify various activity of the patient when patient is alone.
- Calculate the time of prediction over live video footage.
- Calculate accuracy of performance in detection.
- Create a 5-page report on the chosen problem, technical approach, and results.
