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| **DAYANANDA SAGAR UNIVERSITY**  A blue and black text  Description automatically generated  COGNITIVE LOAD QUANTIFICATION  for Learning Assessment  Project Implementation Details & Discussion |

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# COGNITIVE LOAD QUANTIFICATION FOR LEARNING ASSESSMENT

**Based On Computer Vision**

## Project Implementation Summary

This project establishes a novel, non-intrusive framework to quantify a student's **Cognitive Load (CL)** in real-time, serving as the basis for assessing learning and understanding capabilities defined by **Bloom's Taxonomy** levels.

**I. Constructive Description**

The foundational challenge is to achieve reliable CL quantification using a

**non-intrusive Computer Vision (CV) methodology**. The system's assessment of the learning state is dependent on the student's mood, cognitive load, and commitment. The core technical constraint is deploying a highly accurate model that is small (under 5MB) and capable of running **offline within a browser environment (JavaScript/FaceApi.js)**, eliminating dependency on constant streaming.

The methodology assumes a student's commitment based on time spent on the platform. The project then focuses on using CV as a proxy for physiological metrics (such as blood flow changes) by measuring key behavioral cues like head position, eye position, and posture, to accurately quantify CL. The system will ultimately support on-demand question generation and answer evaluation using a deployed LLM.

## Implementation

