

A Project Report

ON

**Teacher Interaction Analysis**

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## DEPARTMENT OF COMPUTER SCIENCE & ENGINEERING

**CERTIFICATE**

Certified that the project work entitled **Teacher Interaction Analysis** is a bonafied work carried out by partial fulfillment for the award of degree of Bachelor of Engineering in Computer Science and Engineering of the Visvesvaraya Technological University, Belgaum during the academic semester VI Jan 2015 to April 2015.

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# **Introduction**

A teaching method comprises the principles and methods used for instruction. Commonly used teaching methods may include class participation, demonstration, recitation, memorization, or combinations of these. The choice of teaching method or methods to be used depends largely on the information or skill that is being taught, and it may also be influenced by the aptitude and enthusiasm of the students.

Common methods of instructions are as follows : -

**Explaining**

Explaining, or lecturing, is the process of teaching by giving spoken explanations of the subject that is to be learned. Lecturing is often accompanied by visual aids to help students visualize an object or problem. Explaining may meet the needs of auditory or visual learning preferences but often fails to meet the needs of individuals with other learning preferences, such as kinesthetic or social learners. This method is our principle focus, where in we try to analyze the lectures by means of gesture detection.

**Demonstrating**

Demonstrating is the process of teaching through examples or experiments. For example, a science teacher may teach an idea by performing an experiment for students. A demonstration may be used to prove a fact through a combination of visual evidence and associated reasoning.

Demonstrations are similar to written storytelling and examples in that they allow students to personally relate to the presented information. Memorization of a list of facts is a detached and impersonal experience, whereas the same information, conveyed through demonstration, becomes personally relatable. Demonstrations help to raise student interest and reinforce memory retention because they provide connections between facts and real-world applications of those facts. Lectures, on the other hand, are often geared more towards factual presentation than connective learning.

**Collaborating**

Collaboration allows students to actively participate in the learning process by talking with each other and listening to other points of view. Collaboration establishes a personal connection between students and the topic of study and it helps students think in a less personally biased way. Group projects and discussions are examples of this teaching method. Teachers may employ collaboration to assess student's abilities to work as a team, leadership skills, or presentation abilities.

Collaborative discussions can take a variety of forms, such as fishbowl discussions. After some preparation and with clearly defined roles, a discussion may constitute most of a lesson, with the teacher only giving short feedback at the end or in the following lesson.

The aim of our project is to understand the ongoing progressions of a lecture and understand the approaches being taken by the lecturer and measure of how animated, effective, intuitive, influencing a teacher is. By defining a metric system, and providing statistical data on the same we can find out the areas in which a lecturer is able to communicate at their best and areas which can be improved through certain methods which are used by other lecturers.

These methods may involve hand gestures, movement of the teacher, and other such practices which can be monitored and applied to improve the way student and teachers impart in the process of sharing knowledge.

# **Problem Statement**

Academics in today’s world involves multiple entities striving towards absorbing knowledge shared by an identified source in a nurturing environment. With the number of aspirants increasing rapidly, the entities who teach need to increase their efficiency, communication and interaction to handle the demands and provide in depth and equal understanding among all the students.

To tackle this, we need to define metrics to measure of how animated, effective, intuitive, influencing a teacher is, the group of students the teacher can impact.

We aim to achieve the above in 3 intuitive methods as follows:-

1. Identify hand gestures and quantify the gestures.

2. Identify his movement across the stage.

3. Identifying his interaction with students

4. Feedback provided by the students

# **Design**

# **Project Requirements**

In order for the proposed project to be efficient and effective it requires certain environment conditions which directly influence the output.

The ideal environment conditions are as follows:-

* Input video stream should be focused on the entity to be monitored
* Background noise should be minimal for better recognition
* Background area shouldn’t be very bright and colorful
* Background movement should be nonexistent/minimal
* Minimal movement in rest of the frame

**System Requirements:-**

The basic requirements to run our solution are:-

* Intel i3 Processor @ 1.8 Ghz or more
* 1 GB RAM
* Any version of Windows
* Disk space of 500 mb or more

**Implementation**

Our endeavor in this project to provide optimal recognition and simple to use mechanism led us to utilize python as our primary programming language.

OpenCV is the primary tool being used to perform the necessary computation involved in gesture recognition and formulation of events and analysis of the same.

In order to save information gathered by performing analysis on the given data we chose to use XML Data structures which are globally accepted and often used.

# **Results**

# **Conclusion**

# **Future Enhancements**

# **References**

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