

# Acceptance Letter



28th July, 2017

To,  
Dr. (Mrs.) Nupur Giri,  
The Head of Department,  
Computer Engineering Department,  
VESIT

**Subject:** Acceptance Letter for BE Project

Dear Madam,

With reference to the above mentioned subject I would like to bring to your notice that the under mentioned students of Computer Engineering Department, VESIT, would be working under Cere Labs' guidance for their BE project, "Pantomath 'bo' : Discover Cross Modal Human Behavior Analysis", under their internal guide Prof. Sharmila Sengupta from the period July 2017 to March 2018.

I hereby state and confirm that upon successful completion of the project, a completion certificate will be issued to all the students and their internal guide.

Thanking you

**Members:**  
Pratik P. Watwani  
Pravin Tripathi  
Ankit Shaw  
Swastika Thakur

Yours sincerely,

  
Devesh Rajadhyax  
Founder & CEO



**Cere Labs Pvt. Ltd.**

CG - Jambadas Industrial Estate, Near Jawahar Cinema, Dr. R.P. Road, Mulund (West), Mumbai - 400 080, Maharashtra India. Tel.: +91-22-65653301

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# Letter of Completion of Project

**CereLabs**  
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22nd April, 2018

To  
Dr. (Mrs.) Nupur Giri  
Head of the Department  
Computer Engineering  
Vivekanand Education Society's Institute of Technology  
Chembur

## Completion and acceptance of the Final Year (B.E) Project

Dear Madam,

I am writing this letter to certify that the Final Year students, namely, **Ankit Shaw, Swastika Thakur, Pravin Tripathi and Pratik P. Watwani**, of Computer Engineering, VESIT has successfully completed their final year (B.E) project, "**Pantomath 'Bo: Discover Cross-Modal Human Behavior Analysis**" subordinate to my guidance (Cere Labs Pvt. Ltd ) And their internal guide **Prof. Mrs Sharmila Sengupta**.

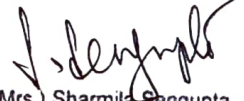
As agreed upon acceptance, this letter is intended for the purpose of acceptance of their project and ultimately a successful completion under my belief.

Thank you.

### Members:

Ankit Shaw  
Swastika Thakur  
Pravin Tripathi  
Pratik P. Watwani

### Internal Guide

  
Prof. (Mrs.) Sharmila Sengupta

Yours Sincerely

  
**Devesh Rajadhyax**  
Founder and CEO



**Cere Labs Pvt. Ltd.**

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**VIVEKANAND EDUCATION SOCIETY'S INSTITUTE OF  
TECHNOLOGY**  
**Department of Computer Engineering**



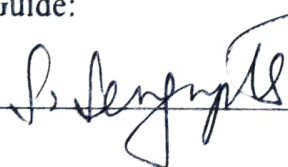
## Certificate

This is to certify that Ankit Shaw, Swastika Thakur, Pravin Tripathi, Pratik Watwani of Fourth Year Computer Engineering studying under the University of Mumbai have satisfactorily completed the project on ***"PANTOMATH 'BO - DISCOVER CROSS MODAL HUMAN BEHAVIOR ANALYSIS"*** as a part of their coursework of PROJECT-II for Semester-VIII under the guidance of their mentor ***Prof. Sharmila Sengupta*** in the year 2017-2018.

This thesis/dissertation/project report entitled ***Pantomath 'Bo - Discover Cross Modal Human Behavior Analysis*** by ***Ankit Shaw, Swastika Thakur, Pravin Tripathi, Pratik P. Watwani*** is approved for the degree of Computer Engineering (BE).

Program Outcomes	Grade
PO1, PO2, PO3, PO4, PO5, PO6, PO7, PO8, PO9, PO10, PO11, PO12, PSO1, PSO2	D

Date: 24/4/18  
Project Guide:



**Project Report Approval**  
**For**  
**B. E (Computer Engineering)**

This thesis/dissertation/project report entitled *Pantomath 'BO - Discover Cross Modal Human Behavior Analysis* by *Ankit Shaw, Swastika Thakur, Pravin Tripathi, Pratik P. Watwani* is approved for the degree of  
Computer Engineering.

Internal Examiner

*[Signature]*

External Examiner

*[Signature]*  
21/04/2018

*[Signature]* - Head of the Department

*[Signature]*  
24/4/18

Principal

*[Signature]*

PRINCIPAL

VIVEKANAND EDUCATION SOCIETY'S  
INSTITUTE OF TECHNOLOGY  
HASHU ADVANI MEMORIAL COMPLEX,  
COLLECTOR'S COLONY, CHEMBUR,  
MUMBAI-400 074, INDIA.

Date: 24/4/18

Place: Chembur



## **Abstract**

Job interviews are a predominant part of any hiring process to evaluate applicants. It is used to evaluate applicant's knowledge, skills, abilities, and behavior in order to select the most suited person for the job. Recruiters make their opinion, on the basis of both verbal and nonverbal communication of an interviewee. Our behavior and communication in daily life are cross modal in nature. Facial expression, hand gestures and body postures are closely linked to speech and hence enrich the vocal content. Nonverbal communication plays an important role in what we are saying and what we actually mean to say. It carries relevant information that can reveal social construct of a person as diverse as his personality, state of mind, or job interview outcome; they convey information in parallel to our speech. In this paper we present an automated, predictive expert system framework for computational analysis of HR Job interviews. The system includes analysis of facial expression, language and prosodic details of the interviewees and thereby quantifies their verbal and nonverbal behavior. The system predicts the rating on the overall performance of the interviewee and on each behavior traits and hence predict their personality and hireability.

We introduce a computerized, predictive expert system framework of HR Job interviews. The framework incorporates the examination of facial expression appearance, dialect and prosodic subtle elements of the interviewees and accordingly evaluates their verbal and nonverbal conduct. The framework predicts the rating on the general execution of the interviewee and on every conduct attributes and henceforth foresee their identity and hireability.

**Keywords:** cross modal, expert system, facial expression, HR Interviews, Behavior Analysis, Cross-modal analysis.