

**Project Proposal**

Signify

**Course: CSE422 ; Artificial Intelligence Lab**

**Submitted By:**

**MU\_Joyoddhoni**

Shahadat Hossain Nafisa Nusrat Tanha

ID : 191-115-098 ID : 191-115-101

B.Sc in Computer Science & Engineering

Batch : 47(C)

**Under Supervision Of:**

**Manal Aymaan**

Lecturer

Department OF Computer Science & Engineering

Metropolitan University

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Signify (Sign Language Detection)

**Overview:**

This Proposal Interprets The Idea Of “Signify” A Sign Language Detection Using Image Processing. It Is A Part Of Artificial Intelligence Lab Which Is 1.5 Credit Course Going On Computer Science & Engineering Department At Metropolitan University Sylhet. This Proposal Explains The Details Of The Project Idea.

**Background and Motivation:**

Sign Language Is Manual Communication Commonly Used By People Who Are Deaf And Dumb. Sign Language Is Not Universal. People Who Are Deaf From Different Countries Speak Different Sign Languages. The Gestures Or Symbols In Sign Language Are Organized In A Linguistic Way. Each Individual Gesture Is Called A Sign. Deaf And Mute People Use Hand Gesture Sign Language To Communicate, Hence Normal People Face Problems In Recognizing Their Language By Signs Made. Hence There Is A Need For Systems That Recognize The Different Signs And Conveys The Information To Normal People. While Automatic Speech Recognition Has Now Advanced To The Point Of Being Commercially Available, Automatic Sign Language Detection Is Still In Its Infancy. So We Want To Make Such A Project By Which We Can Make Something Useful And Beneficial For People Who Are In Need.

**Objective :**

We Want To Make A Sign Language Detection With Better User Interface And More Beneficial.

❏The Objective Of This Project Is To Identify The Symbolic Expression Through Images So That The Communication Gap Between A Normal And Hearing Impaired Person Can Be Easily Bridged.

❏To Develop An Automatic Sign Language Detection System With The Help Of Image Processing And Computer Vision Techniques.

❏To Use Natural Image Sequences , Without The Signer Having To Wear Data Gloves Or Colored Gloves, And To Be Able To Recognize Hundreds Of Signs.

❏Communication Is Always Having A Great Impact In Every Domain And How It Is Considered The Meaning Of The Thoughts And Expressions That Attract The Researchers To Bridge This Gap For Every Living Being.

❏To Provide A Real Time User Interface So That Signers Can Easily And Quickly Communicate With Non-Signers.

❏To Efficiently And Accurately Recognize Signed Words, From Bangladeshi Sign Language, Using A Minimal Number Of Training Examples.

**User Interface :**

Our Project User Interface Will Be Very User Friendly. Anyone Can Use Our Project Easily. There Will Be System Of Labeling New Images And Train Them For New Sign Language. There Will Be An Option Of Subtitle Where Subtitle Will Visible While Sign Language Is Detected.

Also There Will Be Percentage Of Accuracy Of Detection Images. User Can Use Camera For Image Processing With The Help Of OpenCV.

**Project Features :**

* Detecting Sign Language From Human Pose Estimation.
* Subtitle System For Sign Language.
* Labeling New Images.
* Train Images For Sign Language.
* Real Time Sign Language Recognition Using Image Processing.
* Hand Gesture Recognition For Sign Language.
* Finger Detection For Sign Language Recognition.
* OpenCV For Faster Image Processing.
* Use of TensorFlow give flexibility and control with feature.

**Technologies:**

* Python
* TensorFlow
* OpenCV

**Timeline:**

|  |  |
| --- | --- |
| Time | To Do |
| Week 1 | Study Selected Article And Write Summary |
| Week 2 | Learning Python and Practice |
| Week 3 | Developing Code |
| Week 4 | Deploy Project |

**Final Submission:** We Hope That We’ll Complete Our Project Within 1st Or 2nd Week Of June.

**List Of 10 Articles**

1. Real-Time Sign Language Detection Using Human Pose Estimation ([Link](https://link.springer.com/chapter/10.1007/978-3-030-66096-3_17))
2. Real Time Bangladeshi Sign Language Detection using Faster R-CNN ([Link](https://ieeexplore.ieee.org/abstract/document/8660780))
3. Sign language recognition using image processing ([Link](https://media.neliti.com/media/publications/342497-sign-language-recognition-using-image-pr-cde337dc.pdf))
4. Sign language recognition using image based hand gesture recognition techniques ([Link](https://ieeexplore.ieee.org/abstract/document/7916786))
5. Finger Detection For Sign language Recognition ([Link](http://www.iaeng.org/publication/IMECS2009/IMECS2009_pp489-493.pdf))
6. Real time Hand Gesture Recognition using different algorithms based on American Sign Language ([Link](https://ieeexplore.ieee.org/abstract/document/7890854))
7. Sign Language Recognition Using Deep Learning on Custom Processed Static Gesture Images ([Link](https://ieeexplore.ieee.org/abstract/document/8537248))
8. Sign Language Recognition: A Deep Survey ([Link](https://www.sciencedirect.com/science/article/abs/pii/S095741742030614X))
9. Sign Language Recognition System Using TensorFlow Object Detection API ([Link](https://link.springer.com/chapter/10.1007/978-3-030-96040-7_48))
10. Real time Sign Language Recognition using PCA ([Link](https://ieeexplore.ieee.org/abstract/document/7019333))