

DEPARTMENT OF COMPUTER SCIENCE AND ENGINEERING ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING

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SIGN LANGUAGE INTERPRETER USING GOOGLE TEACHABLE MACHINE.

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Introduction :

- **The main objective is to translate sign language to text.**
- **This leads to the elimination of the middle person who generally acts as a medium of translation as an interpreter.**
- **Hand gestures are a powerful human communication modality with lots of potential applications and in this context we have sign language recognition, the communication method of deaf people.**
- **American Sign Language (ASL) is a complete, natural language that has the same linguistic properties as spoken languages, with grammar that differs from English.**
- **It is the primary language of many North Americans who are deaf and hard of hearing and is used by some hearing impaired people as well.**
- **Our Project contains a user-friendly environment for the user by providing text output for a sign gesture input.**

Objective :

- **To create a system which can identify specific gestures and use them to convey information through a device.**
- **To provide an efficient and accurate way to convert sign language into text to provide an aid for the hearing impaired.**
- **To provide a simpler and more intuitive way of communication between a human and a computer.**
- **To make everyday communication easier for the auditorily impaired folks.**

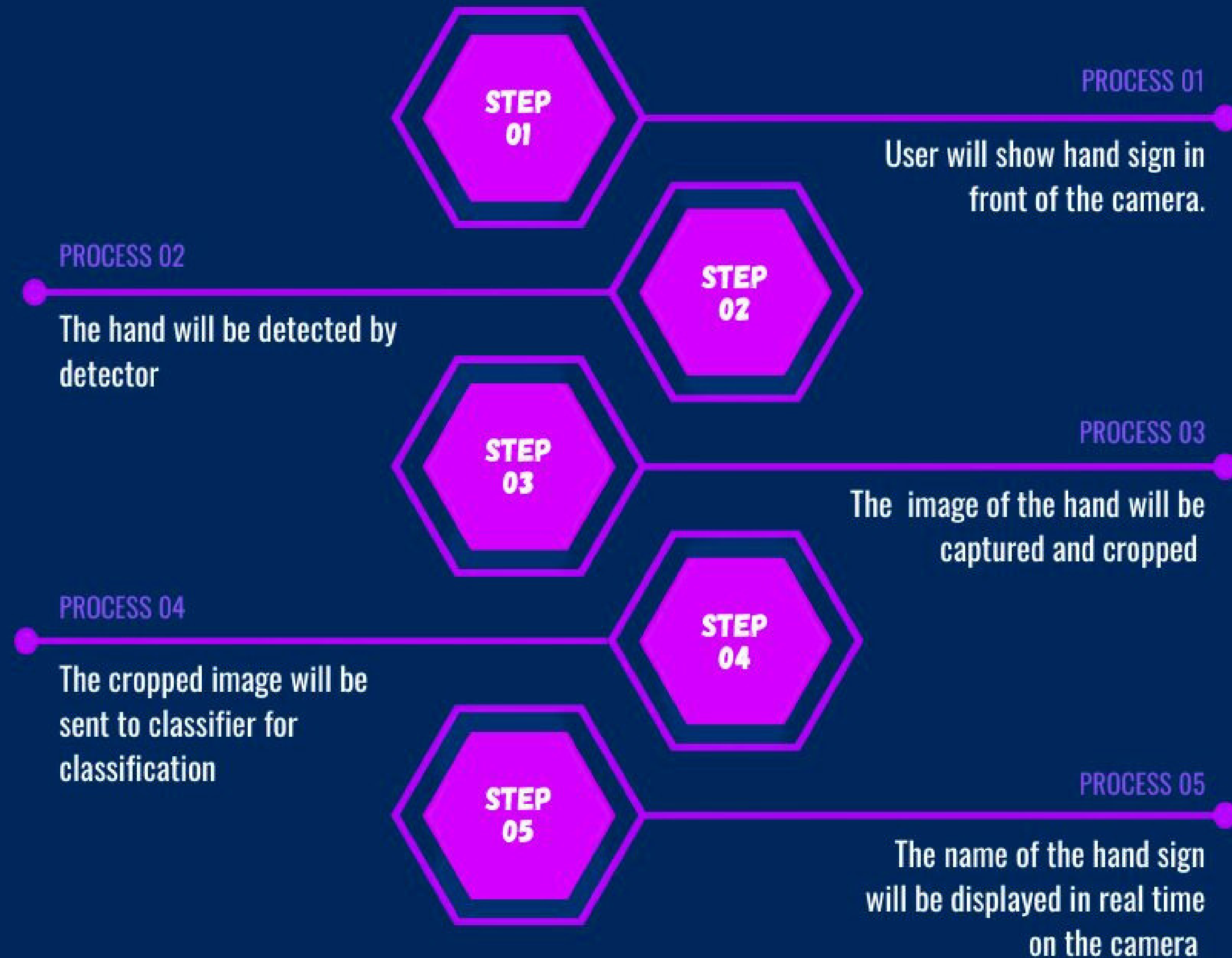
Literature Survey :

Sr. No	Title	Author Name	Description
1	Sign Language Recognition and Translation: A Multidisciplined Approach From the Field of Artificial Intelligence	Becky Sue Parton	Several disciplines of artificial intelligence were examined: robotics, virtual reality, computer vision, neural networks, Virtual Reality Modeling Language (VRML), three-dimensional (3D) animation, natural language processing (NLP), and intelligent computer-aided instruction (ICAI).
2	Sign language recognition using image based hand gesture recognition techniques	Ashish S. Nikam Aarti G. Ambekar	This paper introduced a software which presents a system prototype that is able to automatically recognize sign language to help deaf and dumb people to communicate more effectively with each other or normal people.

Sr. No	Title	Author Name	Description
3	ML Based Sign Language Recognition System	K Amrutha P Prabu	This paper reviews different steps in an automated sign language recognition (SLR) system. Developing a system that can read and interpret a sign must be trained using a large dataset and the best algorithm. As a basic SLR system, an isolated recognition model is developed. The model is based on vision-based isolated hand gesture detection and recognition.
4	Deep learning-based sign language recognition system for static signs	Ankita Wadhawan Parteek Kumar	This paper deals with robust modeling of static signs in the context of sign language recognition using deep learning-based convolutional neural networks (CNN). In this research, total 35,000 sign images of 100 static signs are collected from different users.
5	Sign Language Recognition System	Er. Aditi Kalsh Dr. N.S. Garewal	This project designed a system that can understand the sign language accurately so that the less fortunate people may communicate with the outside world without the need of an interpreter. By keeping in mind the fact that in normal cases every human being has the same hand shape with four fingers and one thumb, this project aims at designing a real time system for the recognition of some meaningful shapes made using hands.

Block Diagram

SIGN LANGUAGE DETECTION

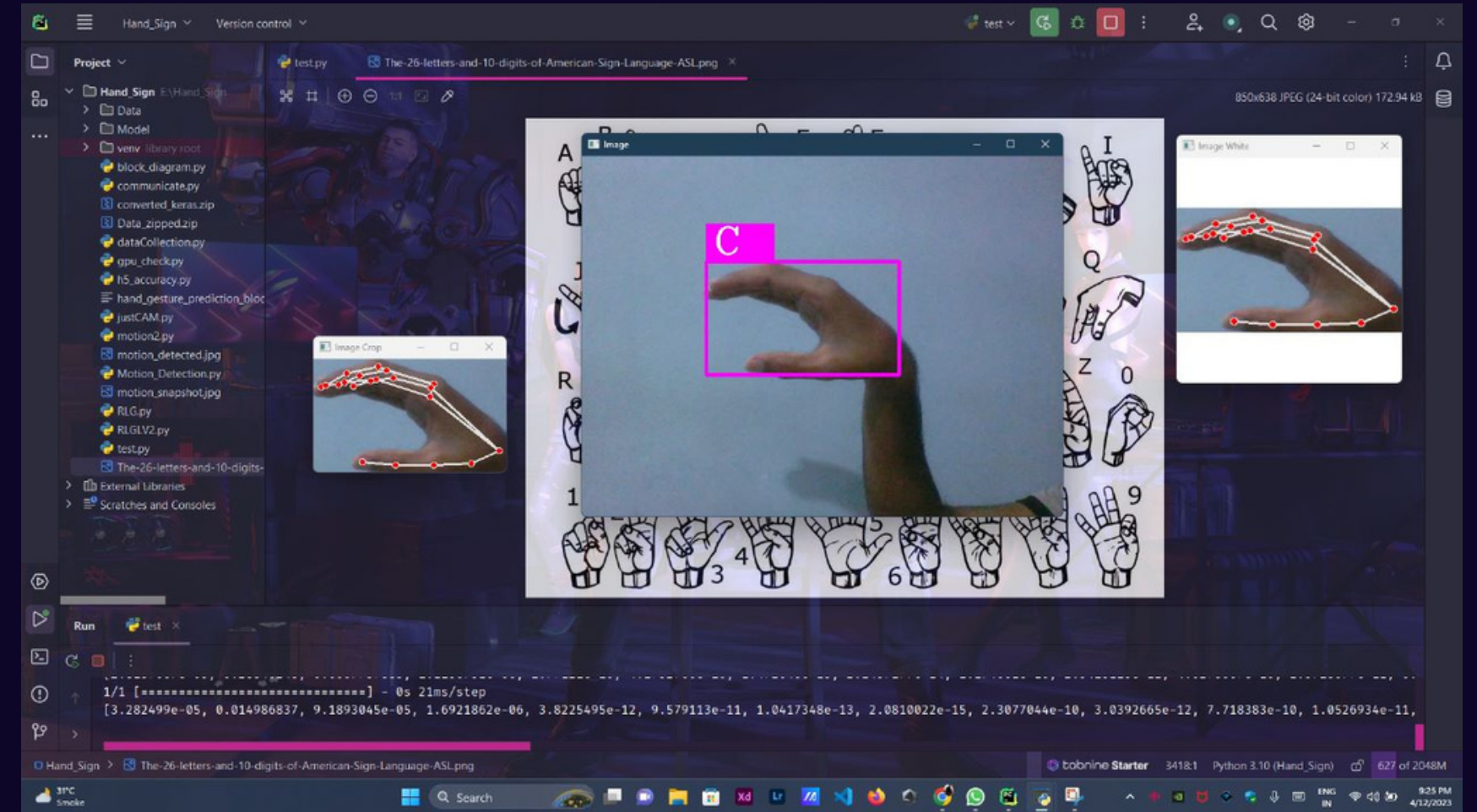
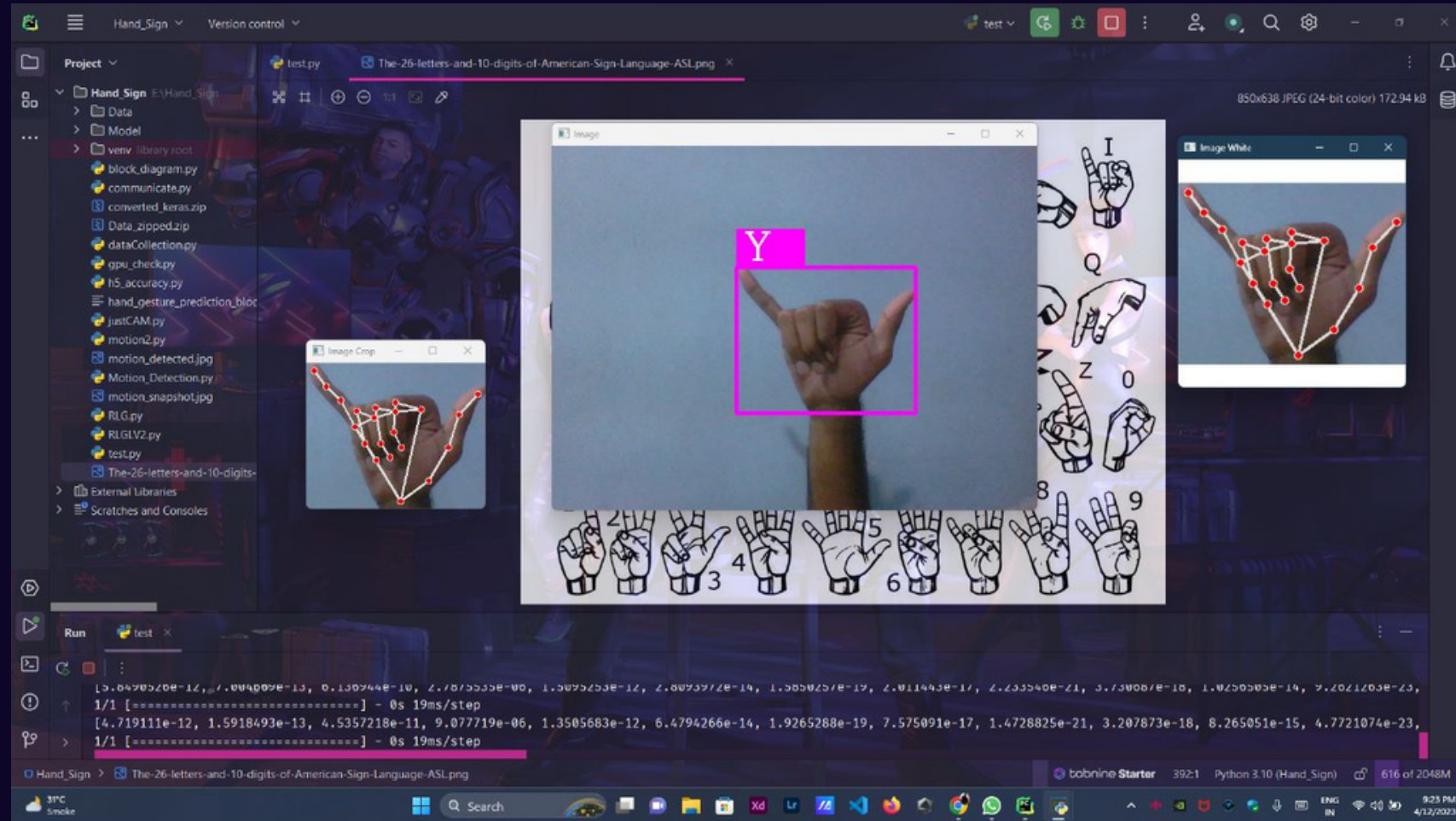


Tools, Software and Languages Used :

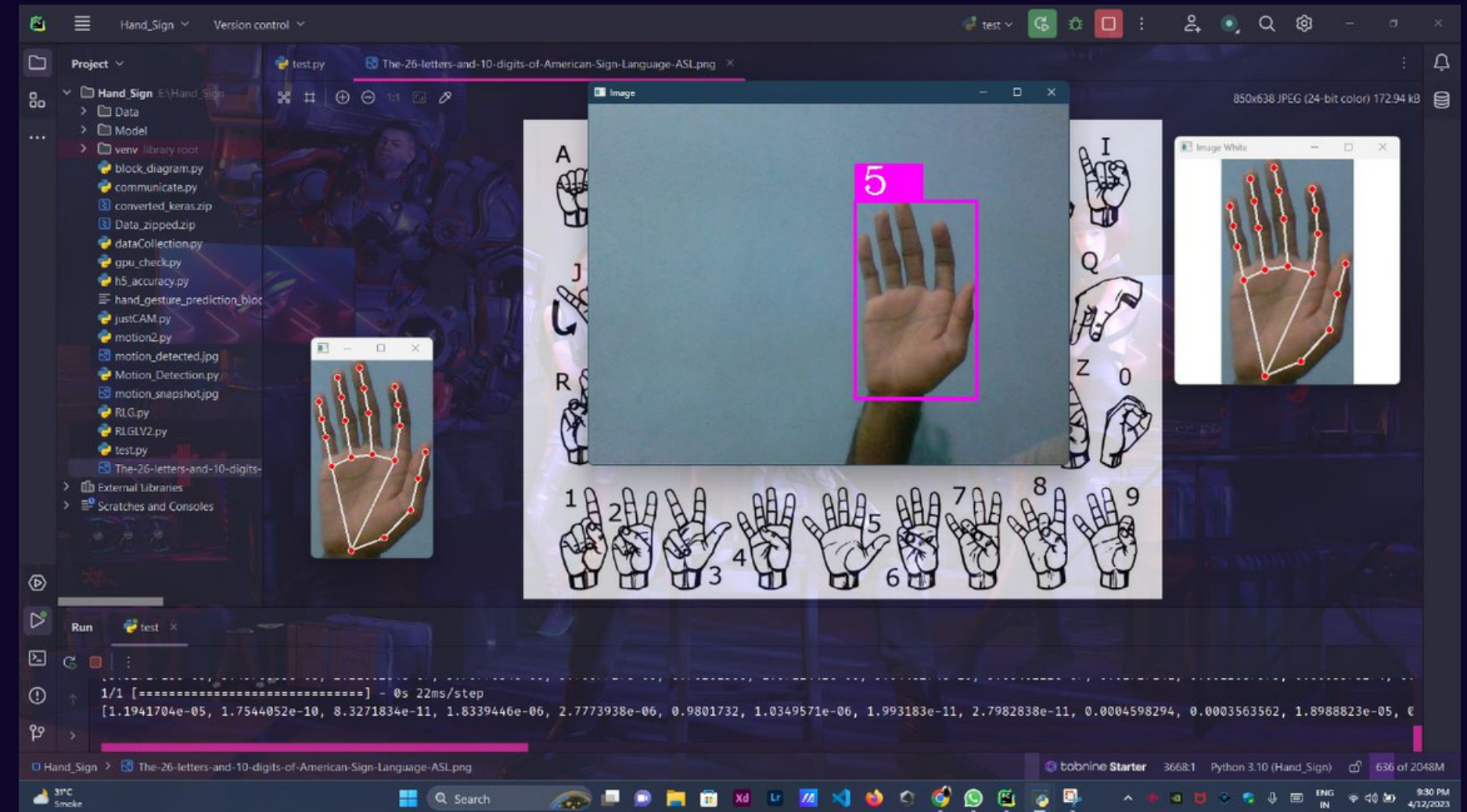
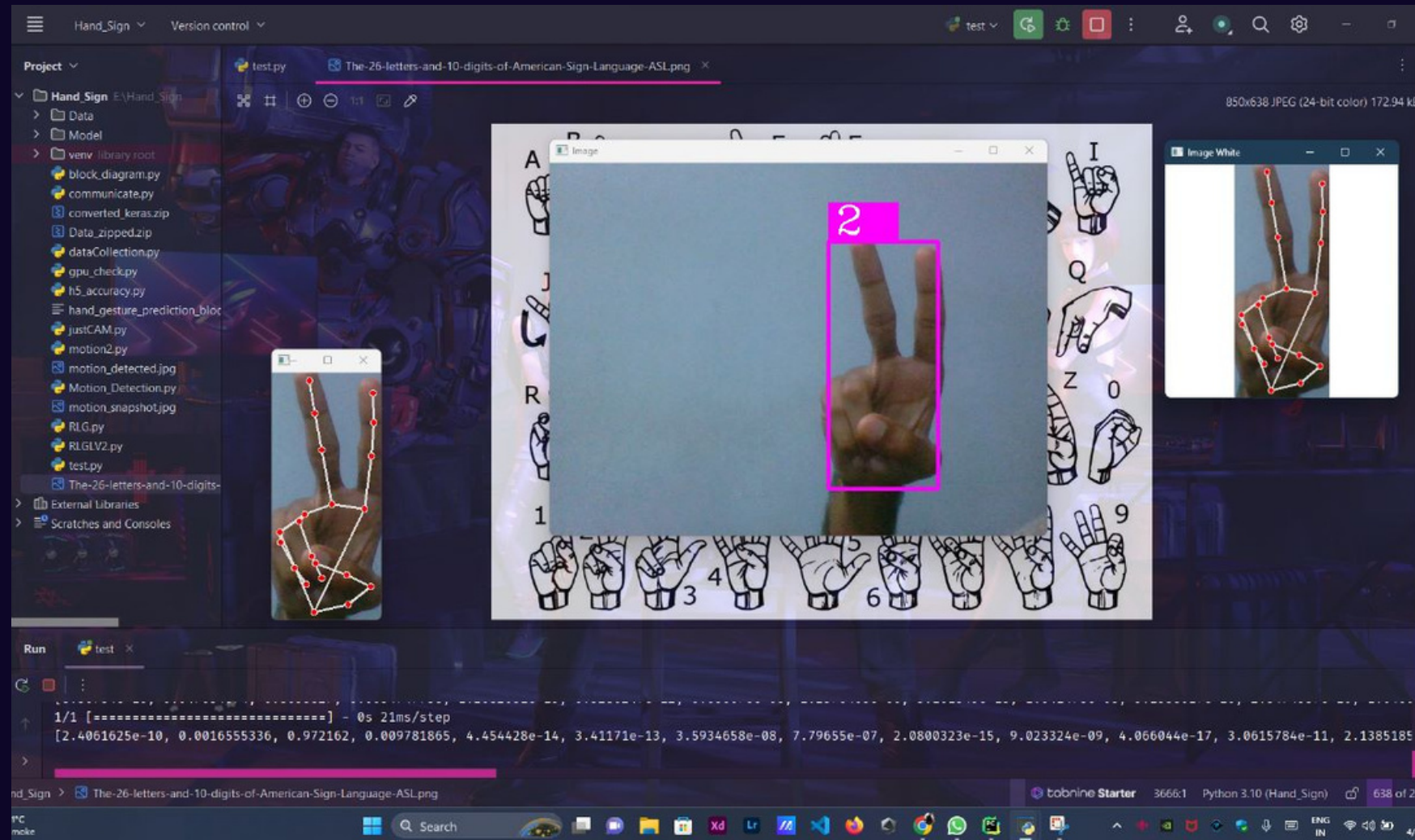
- Python 3
- Open CV
- CV Zone
- Google Teachable Machine
- Pycharm Professional IDE
- TensorFlow
- Keras



Implementation :



Implementation :



Conclusion :

- **As of yet, we've understood core workings of ASL.**
- **Managed to build a Final Working Project.**
- **We further plan to test the accuracy of our system by making an output report which will consist of various test parameters like ideal conditions, worst conditions, accuracy, etc.**
- **Polish the project with the knowledge acquired through further trial, testing and customization.**

References :

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- [2] <https://doi.org/10.1109/ECTIDAMTNCON51128.2021.9425711>
- [3] <https://doi.org/10.1109/INOCN50539.2020.9298376>
- [4] https://www.researchgate.net/publication/357622360_Real_Time_Sign_Language_Detection
- [5] <https://arxiv.org/ftp/arxiv/papers/2201/2201.01486.pdf>

USEFUL LINKS:

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- [17] <https://blog.jetbrains.com/pycharm/2022/06/start-studying-machine-learning-with-pycharm/#:~:text=What%20tools%20are%20used%20in,Conda%2C%20and%20Jupyter%20Notebook%20integrations>

THANKYOU FOR LISTENING !

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