5. CONCLUSION AND FUTURE ENHANCEMENT

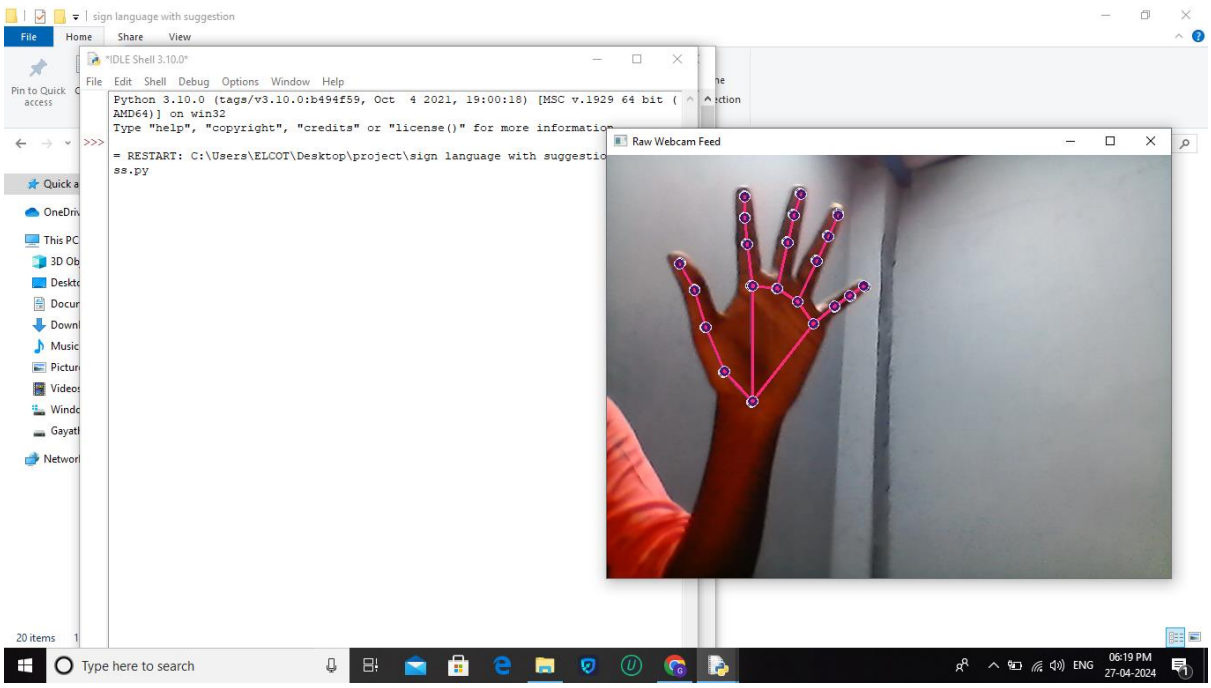
5.1 CONCLUSION

In conclusion, the Sign Language Conversion project represents a significant milestone in the development of automated, real-time systems for interpreting and classifying sign language cues. By leveraging the power of computer vision and machine learning, the project achieves remarkable accuracy and efficiency in detecting hand landmarks and interpreting non-verbal communication from live webcam feeds. The integration of a Random Forest Classifier ensures reliable and objective sign language classification, contributing to the system's consistency and effectiveness. Moreover, the user-friendly frontend enhances the interactive experience, providing users with real-time analysis results and immediate feedback. With diverse applications in human-computer interaction and user behavior analysis, the project marks a substantial advancement in the field of non-verbal communication analysis. Its success offers valuable insights and opportunities for further research and development in this burgeoning domain, promising to revolutionize accessibility and inclusivity for individuals with hearing and speech impairments.

5.2 FUTURE ENHANCEMENT

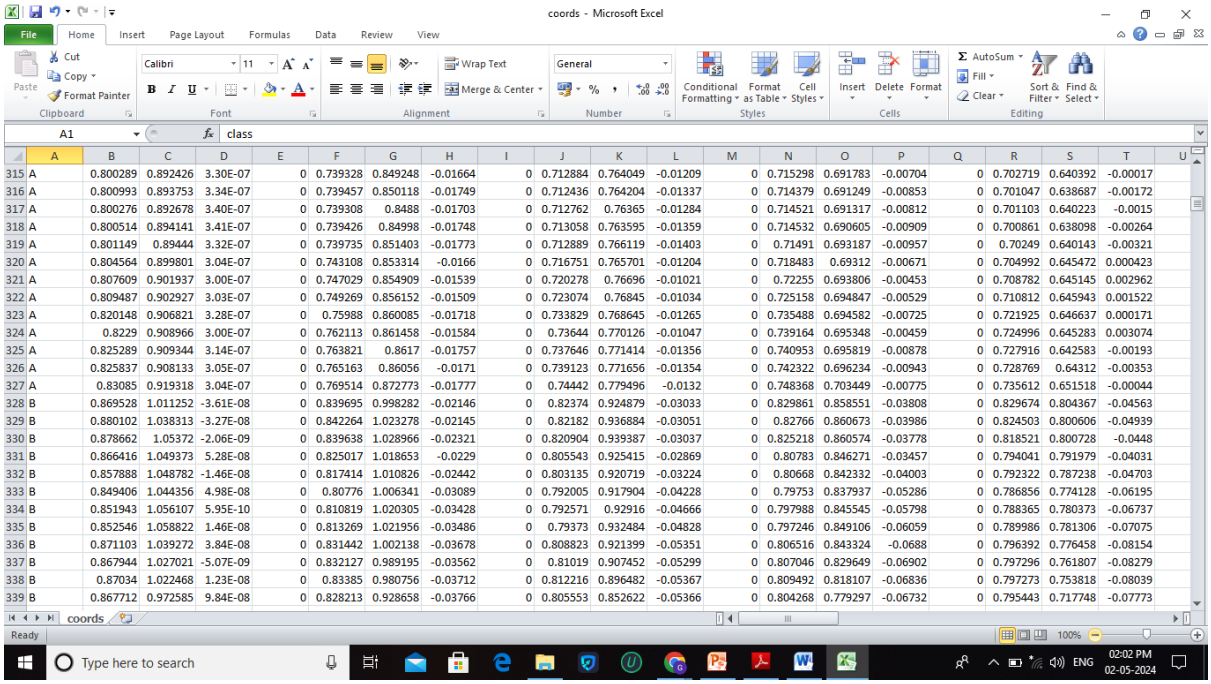
The future of the Sign language Recognition web application is being able to add support for dynamic gestures that are gestures which are performed over a function of time (a few seconds) which is more complex to detect as the system needs to be able to detect the start of a dynamic gesture vs the start of a static gesture. Support for gestures wherein the gestures are performed with a combination of hand movements, pose and facial expressions. The App can be modified in the future to include a feature to enable Text to Speech, increasing the functionality of the App. Beyond these, support for additional multiple languages can be added to the app, perhaps with the help of Google API,

enabling support for more than a hundred different languages. Additionally, Using MediaPipe, the Sign language Recognition web application can be made cross platform, making deployment on iOS a possibility.



A1.PRE-PROCESSING

A2.TRAINED MODULE



coords - Microsoft Excel

	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U
315	A	0.800289	0.892426	3.30E-07	0	0.739328	0.849248	-0.01664	0	0.712884	0.764049	-0.01209	0	0.715298	0.691783	-0.00704	0	0.702719	0.640392	-0.00017	
316	A	0.800993	0.893753	3.34E-07	0	0.739457	0.850118	-0.01749	0	0.712436	0.764204	-0.01337	0	0.714379	0.691249	-0.00853	0	0.701047	0.638687	-0.00172	
317	A	0.800276	0.892678	3.40E-07	0	0.739308	0.8488	-0.01703	0	0.712762	0.76365	-0.01284	0	0.714521	0.691317	-0.00812	0	0.701103	0.640223	-0.0015	
318	A	0.800514	0.894141	3.41E-07	0	0.739426	0.84998	-0.01748	0	0.713058	0.763595	-0.01359	0	0.714532	0.690605	-0.00909	0	0.700861	0.638098	-0.00264	
319	A	0.801149	0.89444	3.32E-07	0	0.739735	0.851403	-0.01773	0	0.712889	0.766119	-0.01403	0	0.71491	0.693187	-0.00957	0	0.70249	0.640143	-0.00321	
320	A	0.804564	0.899801	3.04E-07	0	0.743108	0.853314	-0.0166	0	0.716751	0.765701	-0.01204	0	0.718483	0.69312	-0.00671	0	0.704992	0.645472	0.000423	
321	A	0.807609	0.901937	3.00E-07	0	0.747029	0.854909	-0.01539	0	0.720278	0.76696	-0.01021	0	0.72255	0.693806	-0.00453	0	0.708782	0.645145	0.002962	
322	A	0.809487	0.902927	3.03E-07	0	0.749269	0.856152	-0.01509	0	0.723074	0.76845	-0.01034	0	0.725158	0.694847	-0.00529	0	0.710812	0.645943	0.001522	
323	A	0.820148	0.906821	3.28E-07	0	0.75988	0.860085	-0.01718	0	0.733829	0.768645	-0.01265	0	0.735488	0.694582	-0.00725	0	0.721925	0.646637	0.000171	
324	A	0.8229	0.908966	3.00E-07	0	0.762113	0.861458	-0.01584	0	0.73644	0.770126	-0.01047	0	0.739164	0.695348	-0.00459	0	0.724996	0.645283	0.003074	
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331	B	0.866416	1.049373	5.28E-08	0	0.825017	1.018653	-0.0229	0	0.805543	0.925415	-0.02869	0	0.80783	0.846271	-0.03457	0	0.794041	0.791979	-0.04031	
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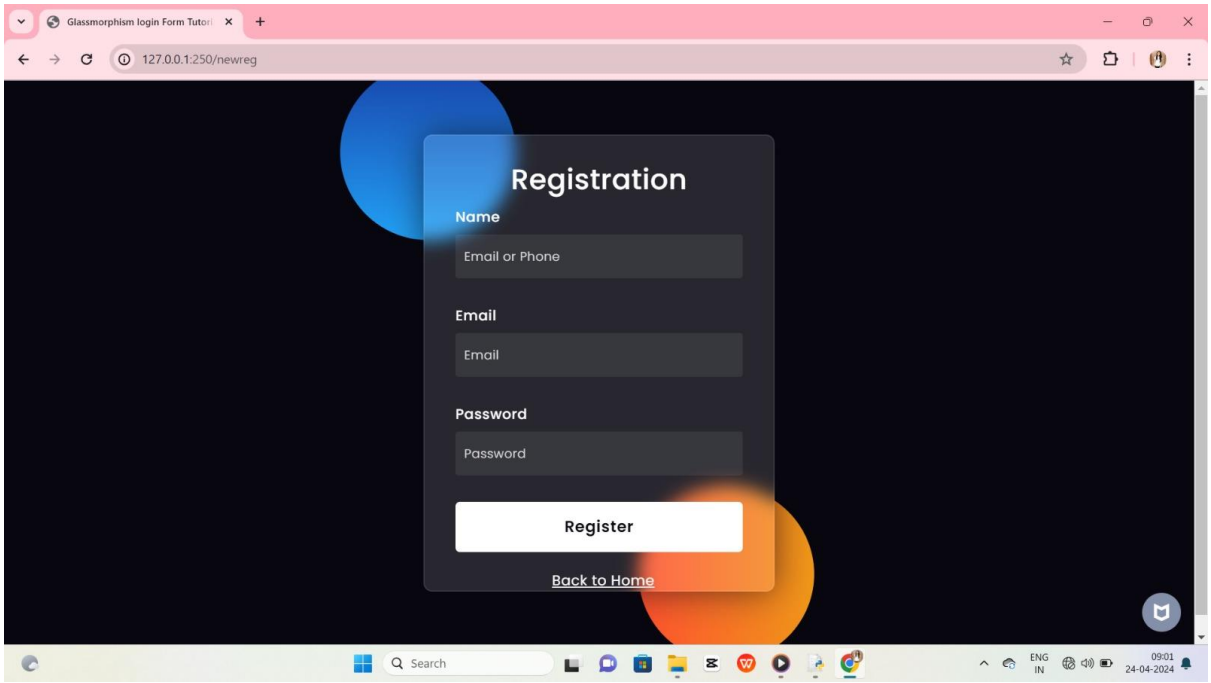
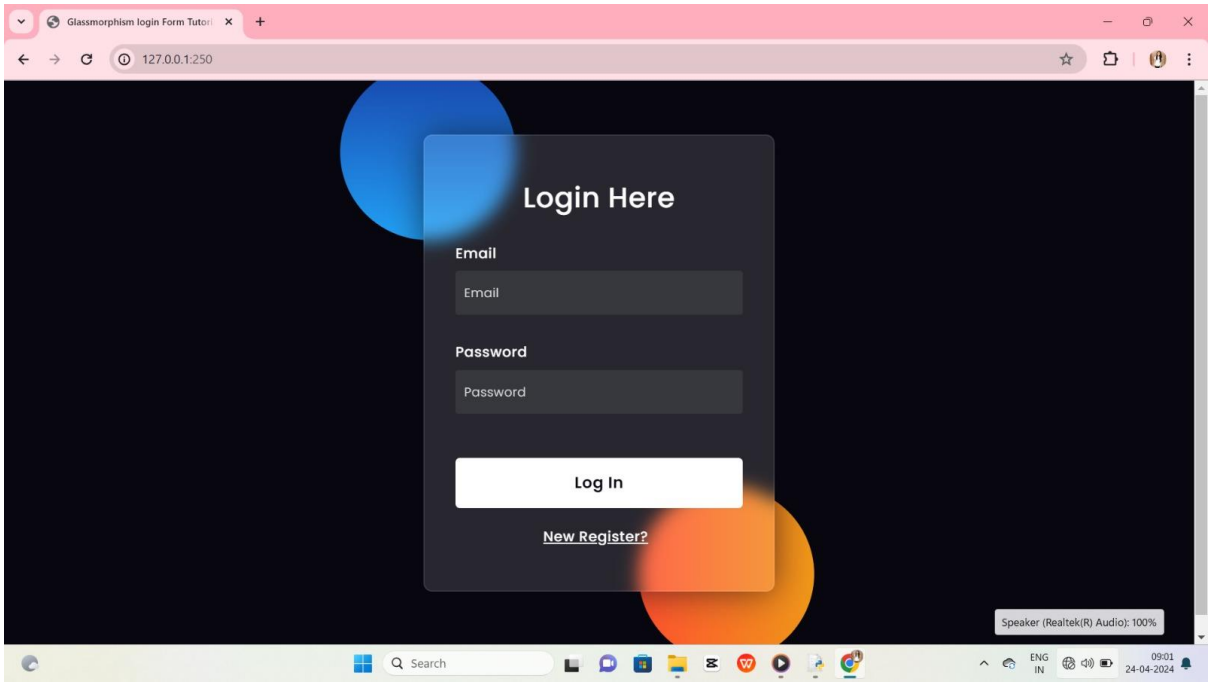
333	B	0.849406	1.044356	4.98E-08	0	0.80776	1.006341	-0.03089	0	0.792005	0.917904	-0.04228	0	0.79753	0.837937	-0.05286	0	0.786856	0.774128	-0.06195	
334	B	0.851943	1.056107	5.95E-10	0	0.810819	1.020305	-0.03428	0	0.792571	0.92916	-0.04666	0	0.797988	0.845545	-0.05798	0	0.788365	0.780373	-0.06737	
335	B	0.852546	1.058822	1.46E-08	0	0.813269	1.021956	-0.03486	0	0.79373	0.932484	-0.04828	0	0.797246	0.849106	-0.06059	0	0.789986	0.781306	-0.07075	
336	B	0.871103	1.039272	3.84E-08	0	0.831442	1.002138	-0.03678	0	0.808823	0.921399	-0.05351	0	0.806516	0.843324	-0.0688	0	0.796392	0.776458	-0.08154	
337	B	0.867944	1.027021	-5.07E-09	0	0.832127	0.989195	-0.03562	0	0.81019	0.907452	-0.05299	0	0.807046	0.829649	-0.06902	0	0.797296	0.761807	-0.08279	
338	B	0.87034	1.022468	1.23E-08	0	0.83385	0.980756	-0.03712	0	0.812216	0.896482	-0.05367	0	0.809492	0.818107	-0.06836	0	0.797273	0.753818	-0.08039	
339	B	0.867712	0.972585	9.84E-08	0	0.828213	0.928658	-0.03766	0	0.805553	0.852622	-0.05366	0	0.804268	0.779297	-0.06732	0	0.795443	0.717748	-0.07773	

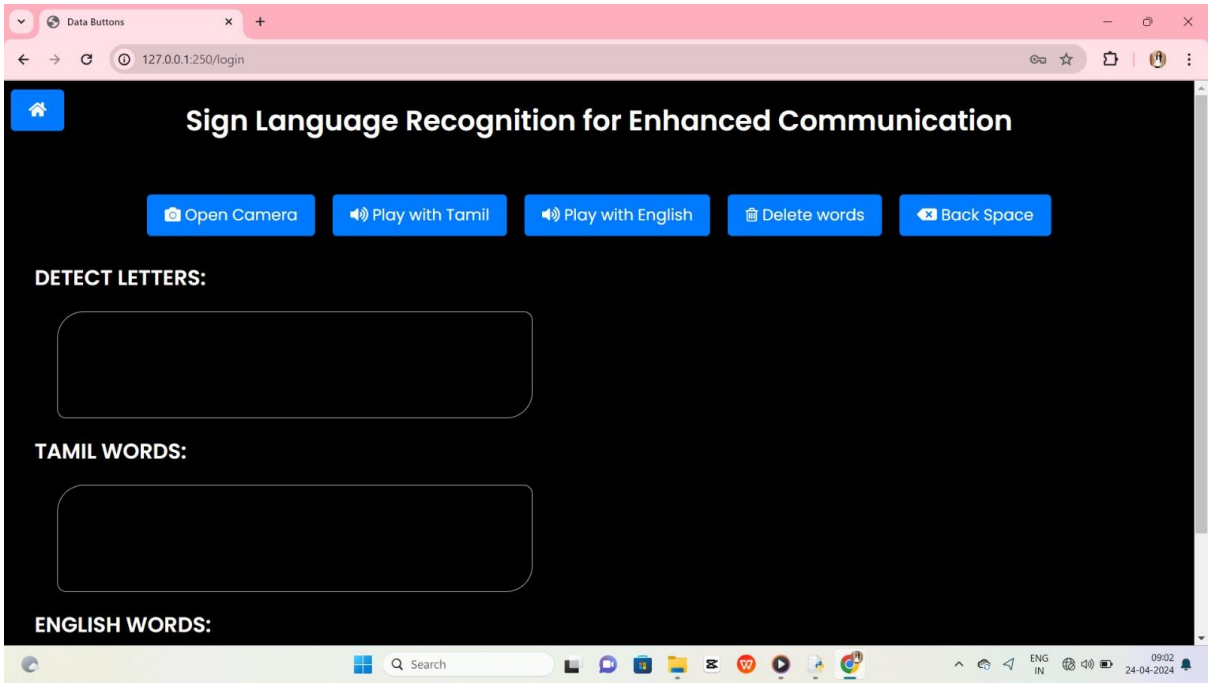
A3.CSV FILE



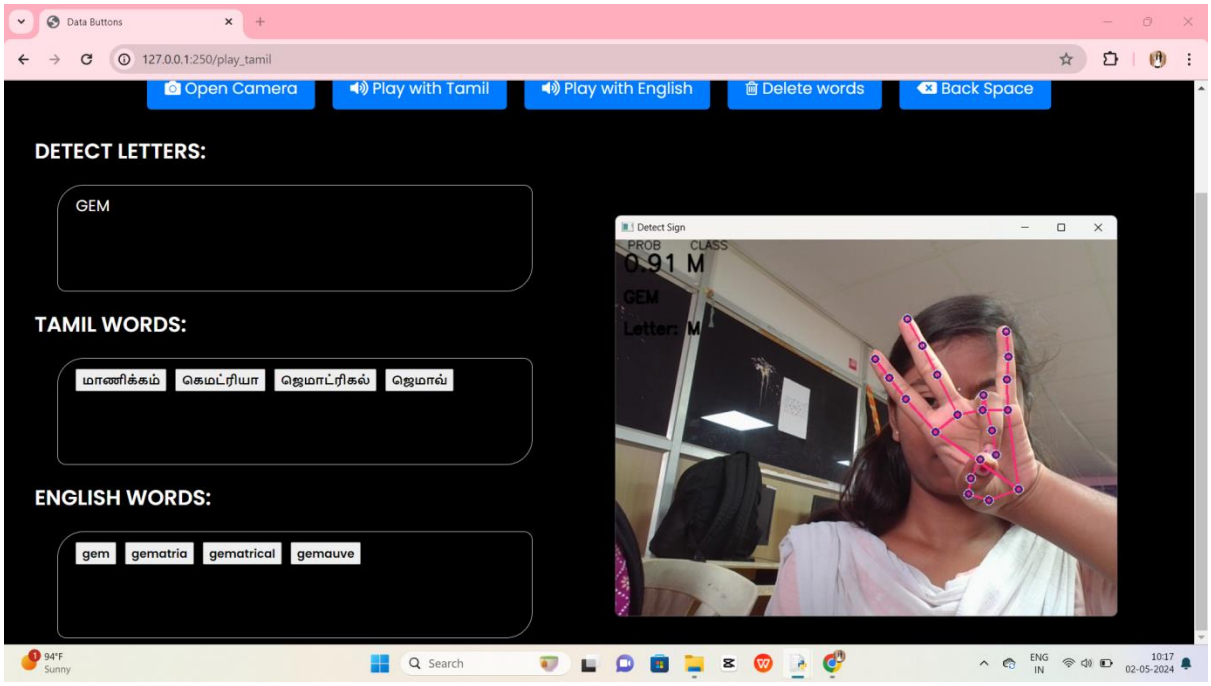
A4.REGISTRATION PAGE



A5.LOGIN PAGE



A6.SIGN LANGUAGE RECOGNITION


Data Buttons
127.0.0.1:250/play_tamil
Open Camera
Play with Tamil
Play with English
Delete words
Back Space
DETECT LETTERS:
GEM
TAMIL WORDS:
மாணிக்கம்
கெமட்ரியா
ஜெமாட்ரிகல்
ஜெமாவ்
ENGLISH WORDS:
gem
gematria
gematrical
gemauve
Detect Sign
PROB
CLASS
0.91 M
GEM
Letter: M
94°F
Sunny
Search
ENG
IN
10:17
02-05-2024

A7.OUTPUT