

Synchronic Automatic Sign Language Recognition

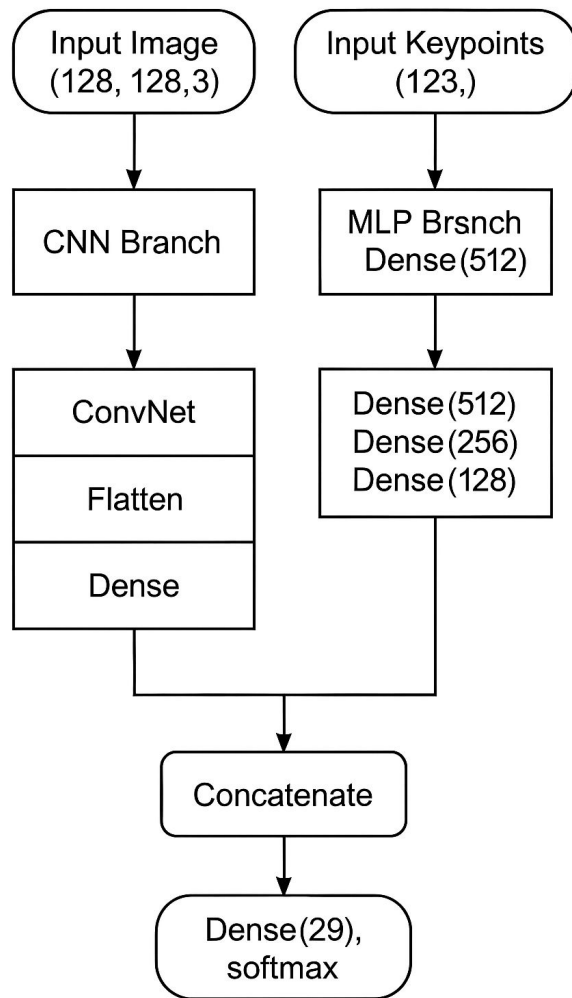
Zidong Xu(zx2507), Caiwu Chen(cc4786)

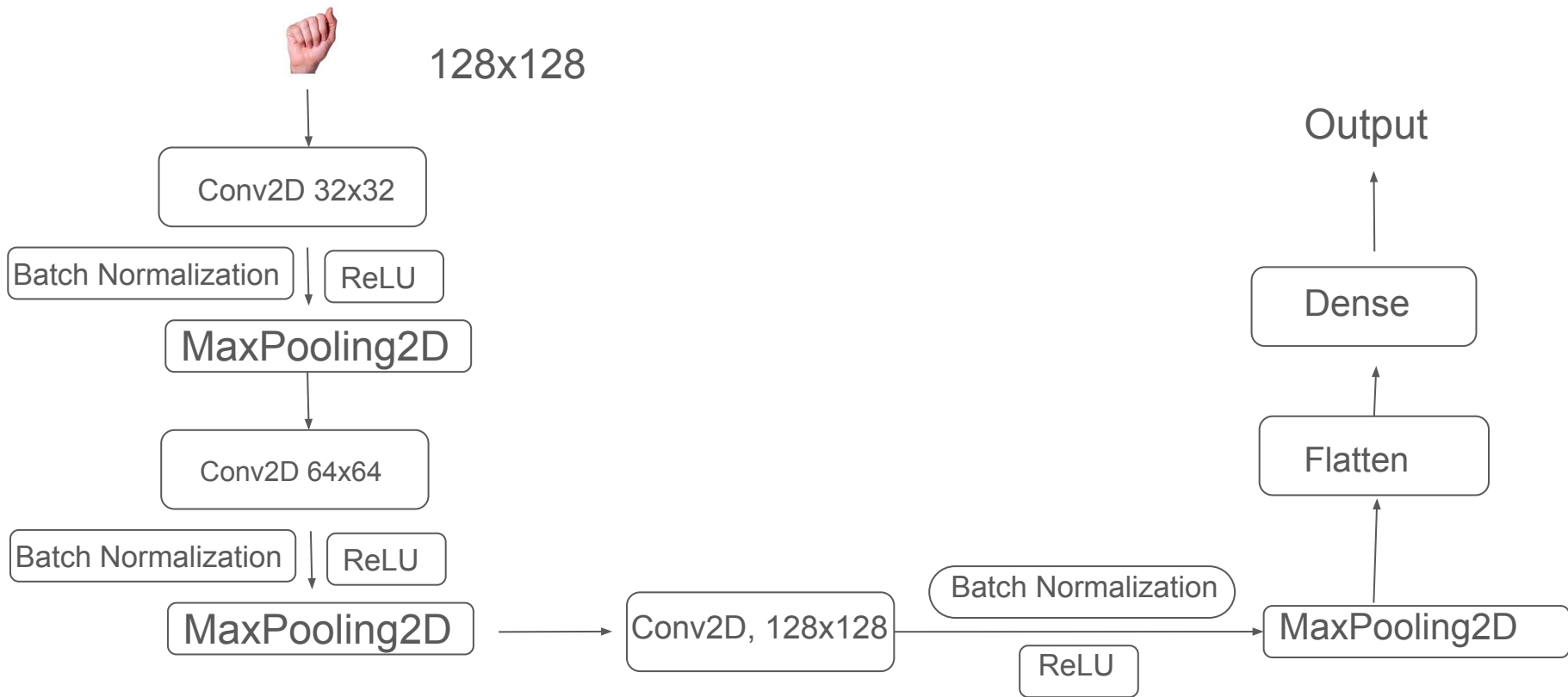
Elevator Pitch

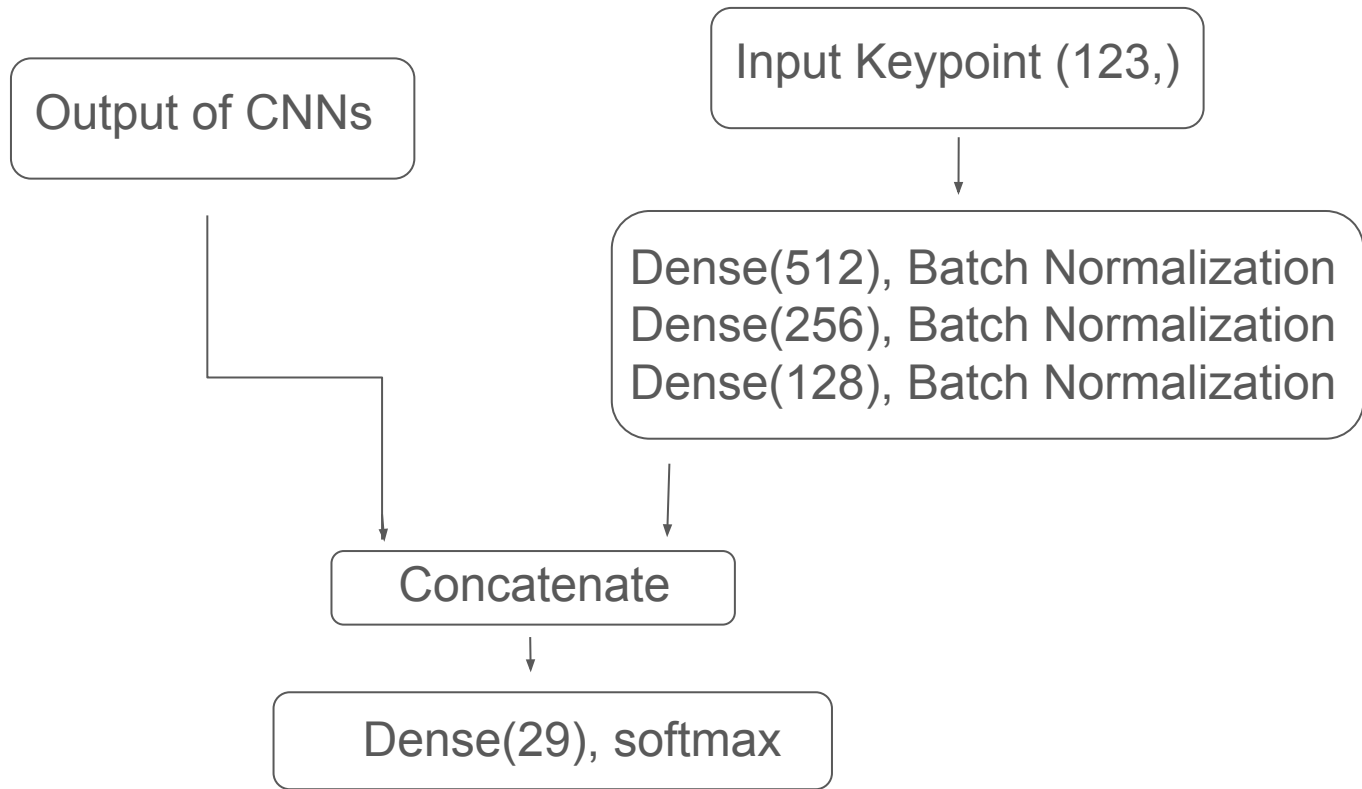
- Goal: Build a real-time Automatic Sign Language Recognition (ASLR) system that translates ASL videos into text.
- Model: Use a lightweight CNN-MLP (.h5) model for fast and accurate recognition.
- Approach:
 - CNN extracts spatial features from each video frame.
 - MLP interprets features and outputs text predictions.
- Noise Reduction: Apply hand landmark detection (e.g., MediaPipe Hands) to focus on gestures and reduce background noise.

Deployment: Train the model and deploy it on a personal computer for real-time translation.
- Impact: Create a compact, robust, and efficient tool to bridge communication gaps for the hearing-impaired community.

Model



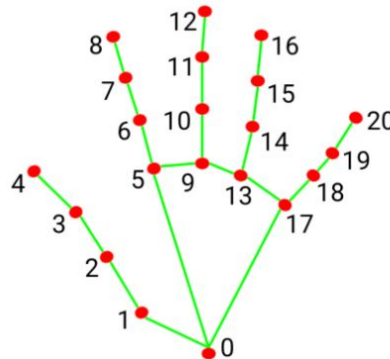
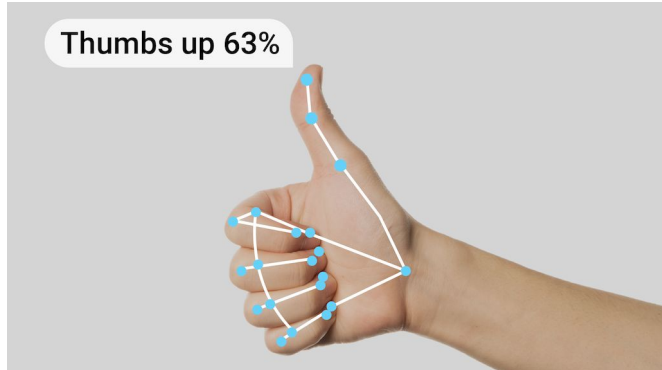




MediaPipe Gesture Recognizer

The MediaPipe Gesture Recognizer task lets you recognize hand gestures in real time, and provides the recognized hand gesture results along with the landmarks of the detected hands.

Using MediaPipe to eliminate noise and provide critical input feature for our model to predict.



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|-----------------------|-----------------------|
| 0. WRIST | 11. MIDDLE_FINGER_DIP |
| 1. THUMB_CMC | 12. MIDDLE_FINGER_TIP |
| 2. THUMB_MCP | 13. RING_FINGER_MCP |
| 3. THUMB_IP | 14. RING_FINGER_PIP |
| 4. THUMB_TIP | 15. RING_FINGER_DIP |
| 5. INDEX_FINGER_MCP | 16. RING_FINGER_TIP |
| 6. INDEX_FINGER_PIP | 17. PINKY_MCP |
| 7. INDEX_FINGER_DIP | 18. PINKY_PIP |
| 8. INDEX_FINGER_TIP | 19. PINKY_DIP |
| 9. MIDDLE_FINGER_MCP | 20. PINKY_TIP |
| 10. MIDDLE_FINGER_PIP | |

DEMO TIME!