<u>**Research Into Improving Live Video Accuracy**</u>

- **How can we incorporate Google MediaPipe hand annotations?**
  - Google MediaPipe is a motion tracking library that is a part of python. It is used to add annotations and features to the motion of a person. This software can be useful for improving live video input because we can use the hand annotations to more accurately portray the features of the sign. For example, signs that are incredibly similar are hard to differentiate because the subtle differences in finger placement can be hard to track. We could use the hand-annotation software on our training data so that our model can use the added feature of exact finger placement. This would theoretically increase the accuracy of our live video input because. Here is an example of the annotations:
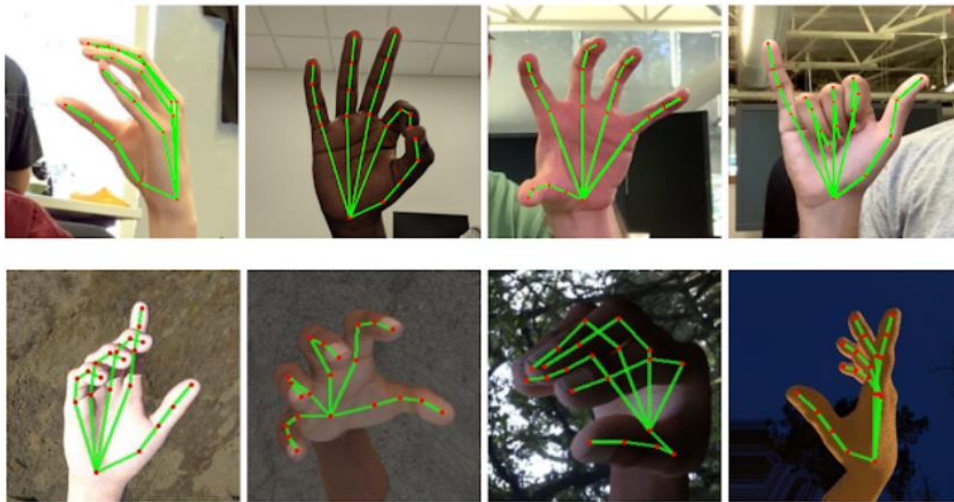
- **How can we use data about previous frames to improve live video accuracy?**
  - We can use previously captured frames from the live video input to increase the accuracy by comparing the previous n frames' accuracy with the next n frames' accuracy. To elaborate, firstly, we take frames 1-5 of a video and take the accuracy of the best guess. Next, we take frames 2-6 and take the accuracy of the best guess. If we continually take the next five frames, then we should see the true best guess being sandwiched between a group of less accurate guesses. The figure below demonstrates this idea:
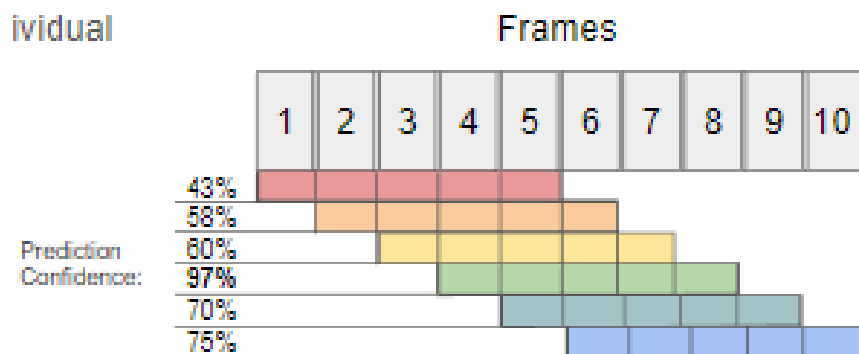
- **What can we do to reduce the impact of overfitting?**
    - Keeping irrelevant attributes in your dataset can result in overfitting. This overfitting of the training data can negatively affect the modeling power and cripple the predictive accuracy. Our group must remove redundant and irrelevant attributes from our dataset before evaluating the model. This will ensure that our data does not have any irrelevant attributes that could be used to make prediction decisions that may only be beneficial by chance in the training dataset. We must remove all quirks from the data that may cause our model to predict a sign based on fallacies. Currently, our model still guesses incorrectly more than half of the time, and this is largely due to overfitting.