

# Computer Vision Diagnostics for Facial Palsy

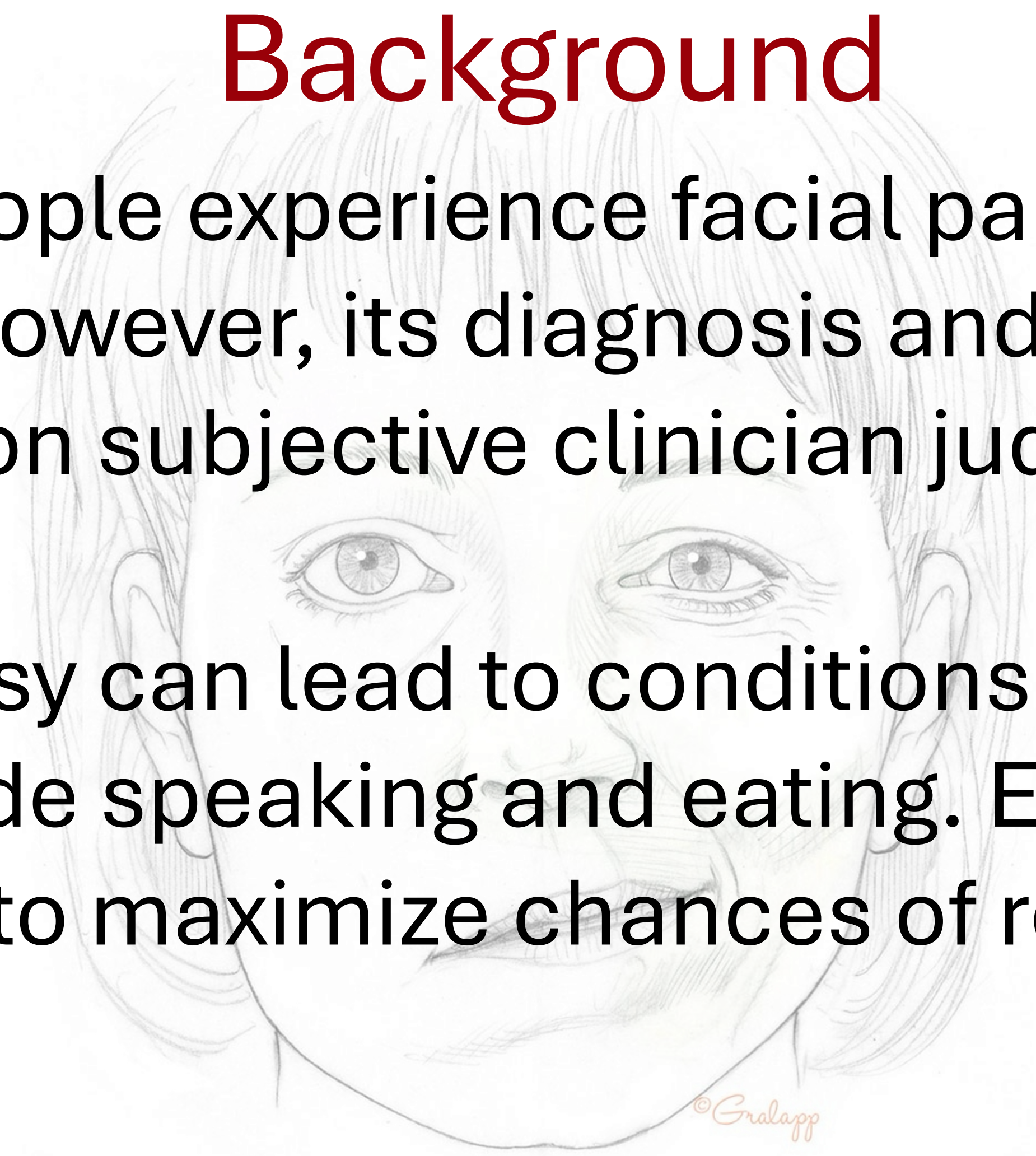
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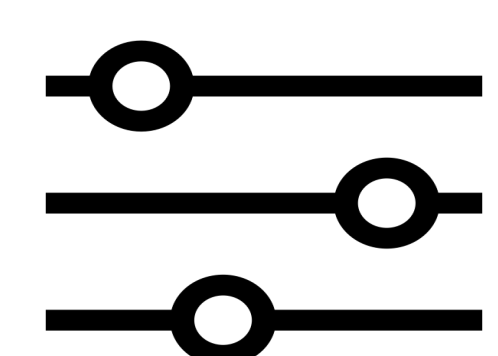
## Background

1 in 60 people experience facial palsy in their lifetime, however, its diagnosis and evaluation depends on subjective clinician judgement.

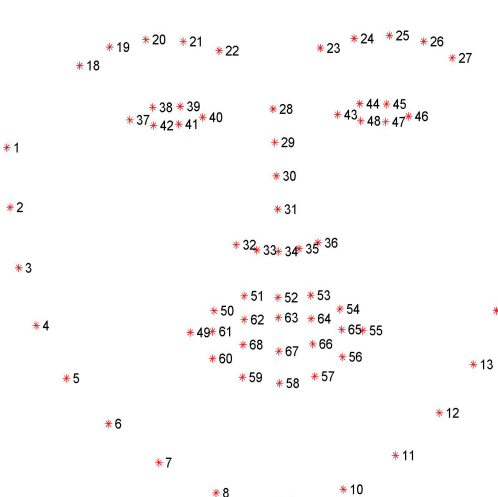
Facial palsy can lead to conditions such as dry eye and impede speaking and eating. Early diagnosis is essential to maximize chances of restoring muscle function.



## Methods



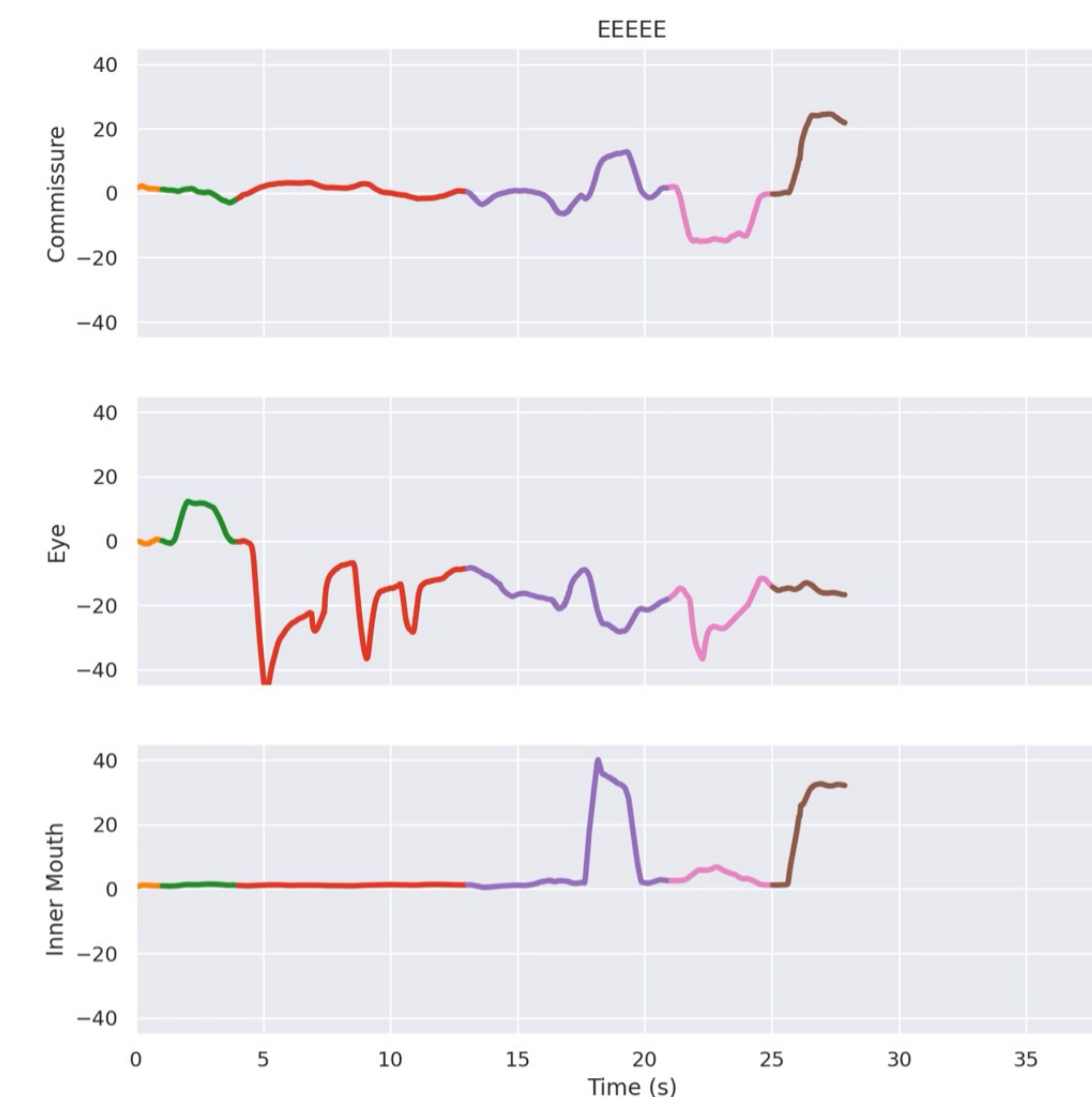
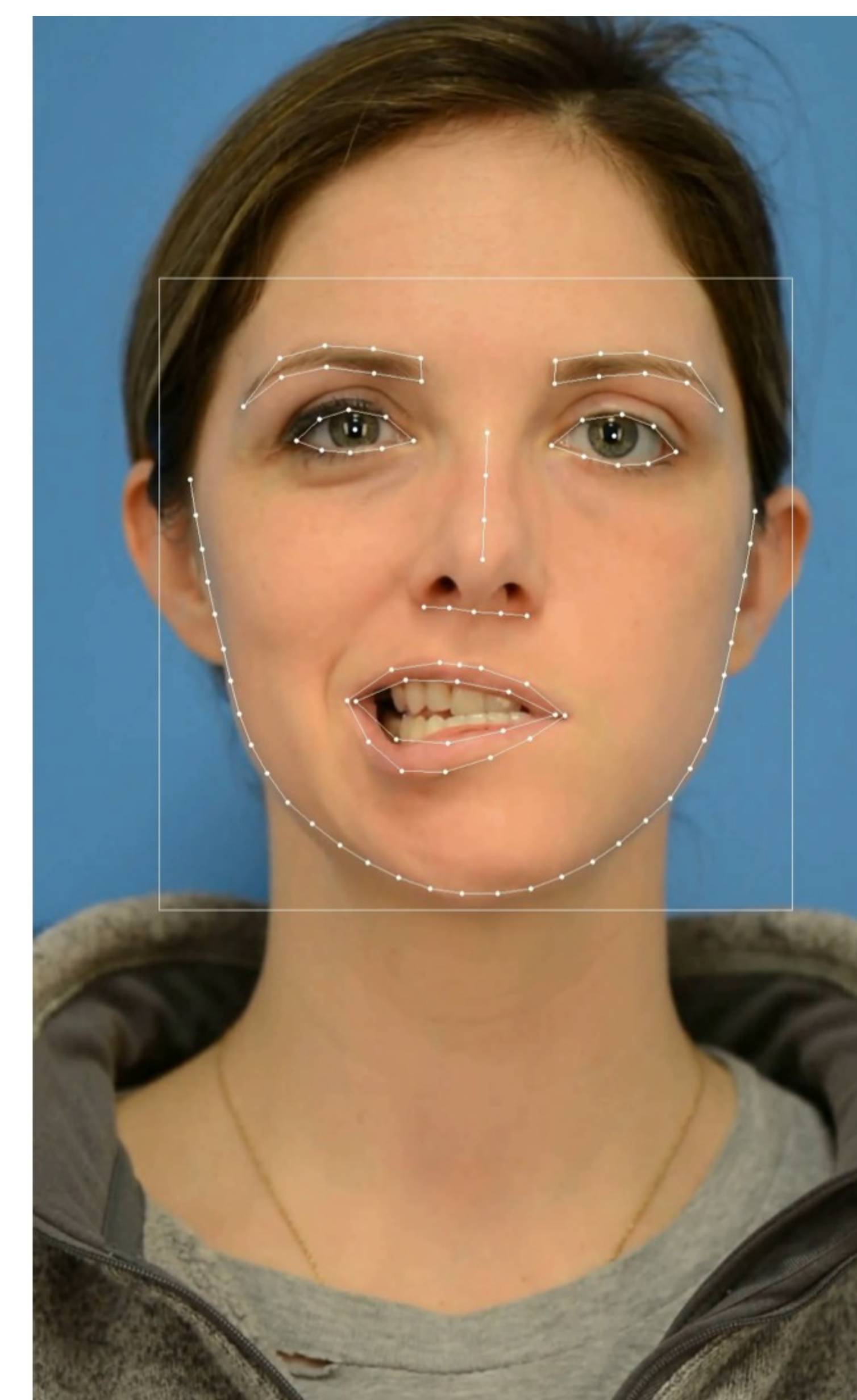
**Score** patient's using eFACE method, based on a series of standardized facial exercises.



**Segment** facial features with MMPose computer vision package on patient videos.



**Train** a machine learning model on labeled videos to predict eFACE scores.



This figure illustrates quantified facial symmetry and movement from the extracted facial landmarks. The model demonstrates concordance with clinician eFACE scores on a held-out test set.

## Next Steps

We aim to implement our image processing pipeline in real-time in clinic. We are also exploring applying the facial symmetry quantification using personal smart phones, leveraging novel face detection technology.

References:

Greene JJ, Guarin DL, Tavares J, Fortier E, Robinson M, Dusseldorp J, Quatela O, Jowett N, Hadlock T. The spectrum of facial palsy: The MEEI facial palsy photo and video standard set. *The Laryngoscope*. 2020 Jan;130(1):32-7.