Comparison Method

1. Do LIME and Saliency highlight the same important features?

- **Saliency (Yudi)**: The saliency map highlights fine-grained details, especially around the eyes, teeth, and parts of the face. However, it also shows scattered noisy spots that don't clearly align with recognizable features.

- **LIME (Zidni)**: The LIME overlay highlights larger contiguous regions like the jawline, cheek, forehead, and parts of the hair. It tends to capture broader structures rather than pixel-level edges.

They do not highlight the same features exactly. Saliency focuses on very specific small features (eyes, mouth), while LIME emphasizes larger areas (face outline, jawline, and hair).

2. Which method provides clearer or more intuitive explanations to a human?

- **LIME** is generally more intuitive for humans, since it produces larger, region-based highlights that correspond to recognizable parts of the face (jawline, forehead, etc.).

- **Saliency maps** can be harder for a non-technical audience to interpret because they look noisy and pixelated, even though they are mathematically precise.

For interpretability, LIME > Saliency, especially when the goal is to communicate results to humans.

3. Limitations or misleading aspects of each method:

- **Saliency (limitations)** :

    - Often too noisy, with scattered pixel-level activations that may not correspond to meaningful facial features.

    - Sensitive to small perturbations, small changes in input can shift the highlighted pixels.

- **LIME (limitations)** :

    - Results can change drastically depending on parameters (number of segments, kernel width, etc.).

    - Highlights broad regions, which may sometimes oversimplify or miss fine details (e.g., eyes or mouth).

    - Can be misleading if segmentation cuts across meaningful boundaries (e.g., mixing hair and face).

Both methods have trade-offs :

- **Saliency** : fine details but noisy.

- **LIME** : intuitive but parameter-sensitive and sometimes coarse.

Final Summary :

- LIME and Saliency highlight different aspects of the image: LIME captures broader regions, Saliency captures pixel-level detail.

- **LIME** is clearer and more human-friendly.

- **Saliency** can look noisy and hard to interpret, while LIME can vary widely with settings and potentially miss fine details.