CS 166 Project Proposal

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1 Introduction

I intend to explore image morphing, that is the process of morphing an image of one face into another. Such tasks have become increasingly relevant in recent years, as with the rise of facial recognition software, the desire to avoid recognition has risen in turn. In [2], a survey of existing image morphing technology is presented. Two major paradigms of image morphing are identified: landmark-based and deep learning-based. In this project, I will explore the landmark-based paradigm. Such methods identify corresponding landmarks in both images, aligns them by morphing the images, and then blending the two images. [1] conducts a survey on landmark based models, and I will use this as a reference for my own implementation.

The inputs to the algorithm are two images, and the output is a series of frames showing the morph from one image to the other. As far as identifying the landmarks, this can either be done by hand or automatically. Results are better for manually annotated data, but it is also more time-consuming. I will perhaps explore both options. No special equipment is needed for this project.

References

[1] Ulrich Scherhag, Christian Rathgeb, Johannes Merkle, Ralph Breithaupt, and Christoph Busch. Face recognition systems under morphing attacks: A survey. *IEEE Access*, 7:23012–23026, 2019.

[2] Sushma Venkatesh, Raghavendra Ramachandra, Kiran Raja, and Christoph Busch. Face morphing attack generation and detection: A comprehensive survey. *IEEE Transactions on Technology and Society*, 2(3):128–145, 2021.