ARIA
APPLIED RESEARCH IN ACTION

Learning Unrestricted Facial Geometry from Lightstage Images

Push the quality of high-fidelity 3D face avatar generation to reach AAA production-level needs.

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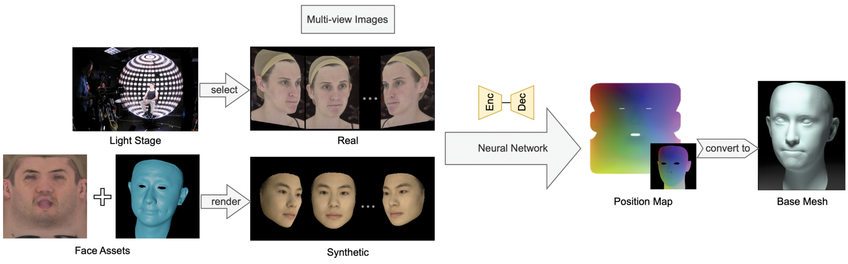

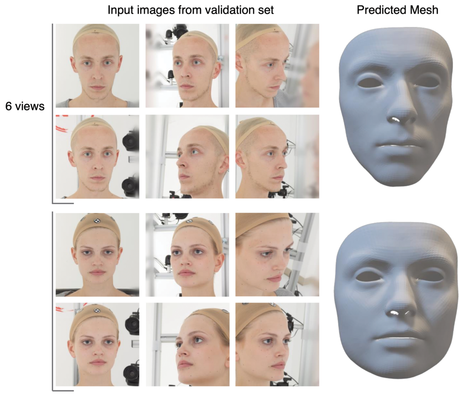

PROJECT SUMMARY

The accurate estimation of 3D facial geometry is a critical task with broad applications in computer graphics, virtual reality, and entertainment industries. Our goal is to estimate facial geometry using deep neural networks (DNNs) from images captured in a controlled light stage environment. Traditional photogrammetry pipelines often suffer from slow processing times due to the intensive computational demands of matching and triangulating features across multiple images. Moreover, these pipelines are susceptible to errors stemming from lighting variations, occlusions, and inconsistencies in feature extraction. Our goal in this project is to leverage deep neural network architecture to learn intricate facial features and their corresponding spatial relationships directly from the light stage images. This approach not only accelerates the estimation process but also mitigates the error-prone nature of traditional pipelines by leveraging the network's ability to generalize complex patterns.

REFERENCES

Liu, S., Cai, Y., Chen, H., Zhou, Y., & Zhao, Y. (2022). Rapid Face Asset Acquisition with Recurrent Feature Alignment. ACM Transactions on Graphics, 41(6), 1–17. https://doi.org/10.1145/3550454.3555509

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