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# Defining cost-effective workflow for a photorealistic 3D character based on a real person using a MetaHuman framework

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## Abstract



The average estimated time for creating a realistic human-like 3D game character using traditional workflow is approximately one hundred hours. Creating corresponding facial animations for the persuasive narrative of 3D characters is even more time-consuming. The manuscript explores the possibilities of creating a personalized digital character according to an actual person within the newly-developed technology. The goal of the work involves defining guidelines for the workflow of generating a personalized three-dimensional character based on a real person in the MetaHuman framework. The given detailed insight into the state-of-the-art methodology for creating game characters ensures understanding and reproducibility within a timeframe that is ten times shorter compared to the standard 3D character design workflow.

## Conclusion



The average estimated time for creating a realistic human-like 3D game character using traditional workflow is approximately one hundred hours. Creating corresponding facial animations for the persuasive narrative of 3D characters is even more time-consuming. The manuscript explores the possibilities of creating a personalized digital character according to an actual person within the newly-developed technology. The goal of the work involves defining guidelines for the workflow of generating a personalized three-dimensional character based on a real person in the MetaHuman framework. The given detailed insight into the state-of-the-art methodology for creating game characters ensures understanding and reproducibility within a timeframe that is ten times shorter compared to the standard 3D character design workflow.

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### 1. GENERATING AN INPUT 3D MODEL

Generate a simplified model using a method called photogrammetry, with the help of an android mobile device and a Polycam mobile application.



### 2. CORRECTING THE TOPOLOGY

Optionally, correct errors that occurred during the reproduction of topological information, remove unnecessary parts in the 3D modeling software and export the file in the appropriate format.



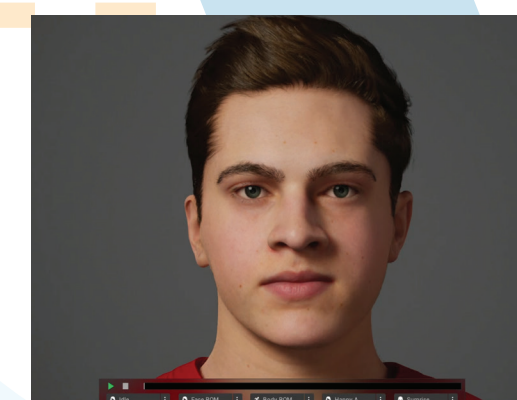
### 3. IMPORTING THE MODEL INTO UNREAL ENGINE 5 AND USING THE METAHUMAN PLUGIN

The points of the template model will be adjusted to the volume of the neutral pose mesh that was analysed, generating the MetaHuman model.



### 4. COMPLETING THE METAHUMAN MODEL IN THE METAHUMAN CREATOR APPLICATION

Correcting the model topology, applying the skin texture, selecting the characteristics of parts of the face and hairy regions of the head.



### 5. IMPLEMENTING THE CHARACTER IN THE UNREAL SCENE

Demonstration of the completed scene and an example of additional personalization of the rest of the model's body.

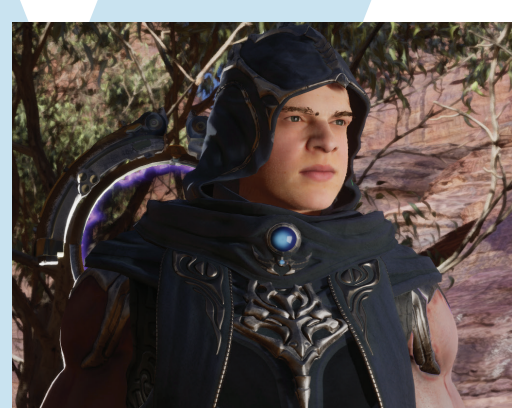


Figure 1

The main stages of creating a character using a MetaHuman framework