D3.6 BODY ANIMATION VISUAL SYNTHESIS

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Abstract	This Deliverable describes the research developed to produce synthetic body animation on the virtual agent starting from the performance of the real actor. Our methods, progress and results are documented.
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3.0 24-02-2022	Updated based on peer review - added references

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1 EXECUTIVE SUMMARY

The work described in this deliverable covers the body animation system driving the digital agent, using generative methods based on motion capture data to synthetically create new body animation. This allows the virtual actor to react to a much wider range of cues without requiring dedicated capture sessions to directly feed their responses.

A number of motion capture shoots have been carried out with our actor Gareth, from which we have built a library of motion capture data representing a wide variety of behavioural characteristics and targeted gestures. Later shoots have also included capture of a second actor, Fran, to increase the diversity of data available.

A lightweight body asset has been created using the UE MetaHuman framework. This was then combined with the Framestore head, topology and rig, giving us our full actor asset for this work. Using this asset and motion capture data we performed a successful automated body solve for the body data from the motion capture sessions.

This data was used to implement generative animation methods for gestures, locomotion and gaze of the agent. This was integrated in the Unreal Engine reference implementation using the BML markup language to allow other components to drive the digital agent.

2 BACKGROUND

D3.6 Body Animation Visual Synthesis is the second deliverable related to the body animation task WP3T4 Behavioural Learning and Knowledge after D3.3 Interim Body Visual Synthesis Demonstration. It also covers work on interactive body animation in WP6T4. The scope of this deliverable includes the creation of the agent lightweight asset, the motion data acquisition and processing, the generation of synthetic body animation and finally, the integration of the developed work into PRESENT reference implementation.

The main purpose of this deliverable is to describe the body animation technology used to create realistic performance animation and how this is used in conjunction with generative animation techniques to puppeteer the character in the Unreal Engine project reference implementation.

The methods described here will be refined and applied in WP8T4 Prototype Evaluations and WP9T3 Agent Demonstration.

3 INTRODUCTION

This deliverable describes the three main components required to produce plausible body animation for the virtual agent. These are the capture of a suitable body animation data set, generative mechanisms to synthesise body motion sequence and the foundation of the Unreal Engine component development. Additionally, the report is supported by recorded demonstrations showcasing the major elements of the deliverable.

You can find the recorded demonstrations here:

https://epicgames.ent.box.com/s/yz48x5p3x2hkem87qvzd0djat292dj13