



Directing Avatars in Live Performances

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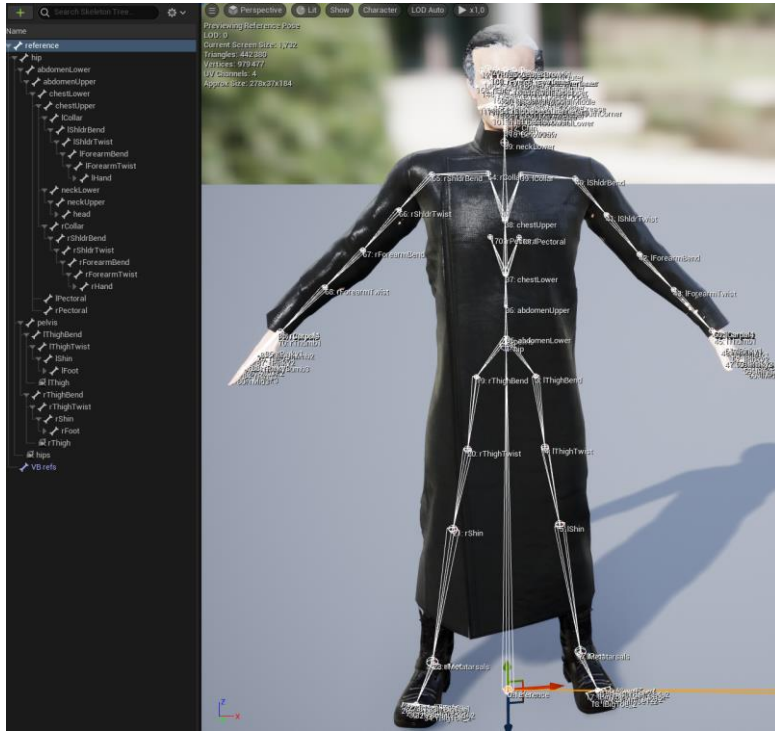
International Online Symposium : Live Performance and Video Games
Appropriations, Inspirations and Mutual Transfers

7th of October 2022

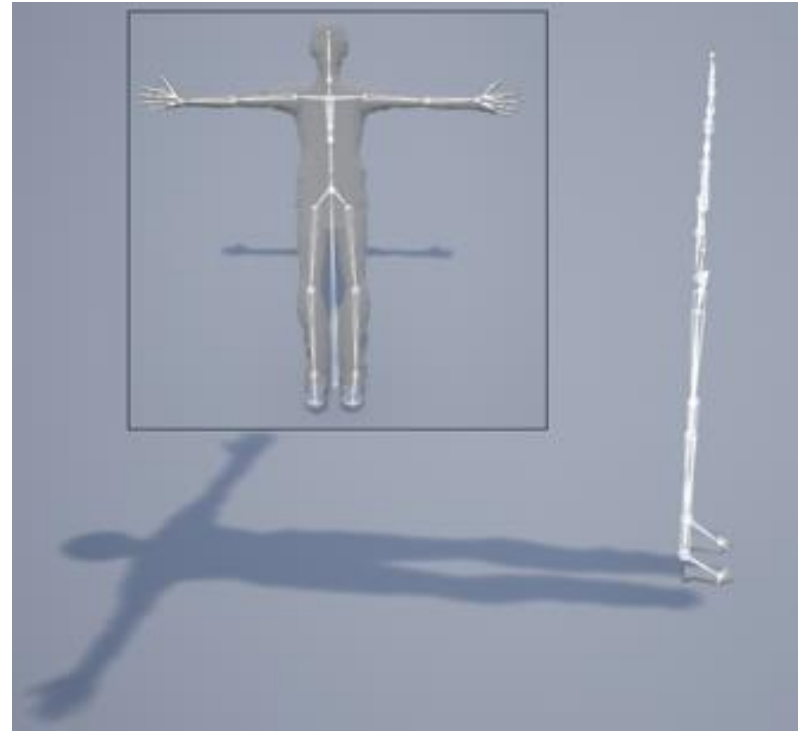
How moves an avatar?

- **Character, Control, Camera**
- Definition of an avatar, after Matrix-Sculpture concept (Plessiet)

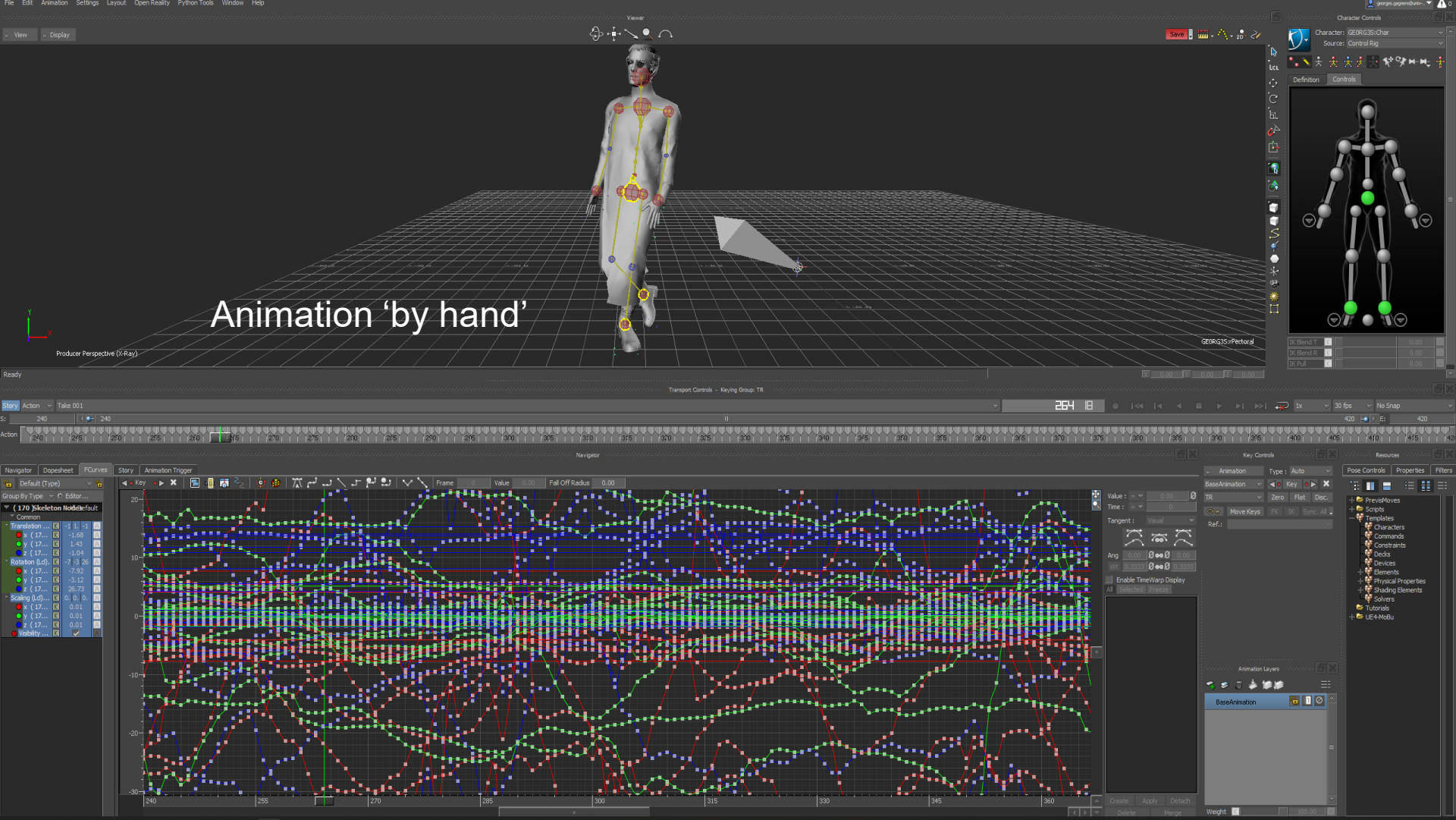
How moves an avatar?



G30RGES Matrix-sculpture
(*The Spectators*)



Shadow Avatar Matrix-sculpture
(*The Shadow*)



Animation 'by hand'



How moves an avatar?



- *Evolved Virtual Creatures*, by Karl Sims (1994)
- **DE**ep **LE**arning for **G**enerating hum**AN** mo**TION** (DELEGATION - ANR project – 2022)

Precalculated vs real time images

- Animation : fixed repartition in space and time of avatar bones positions that needs time to be rendered
- Video game : rendering in real time each frame to interact with gamer inputs

Classification of virtual characters

	Internal Decision	External Decision
Internal Mvt.	Virtual Actor	Virtual Golem
External Mvt.	Virtual Mask	Virtual Puppet

Matrix
Sculpture

PGAM classification (Plessiet)

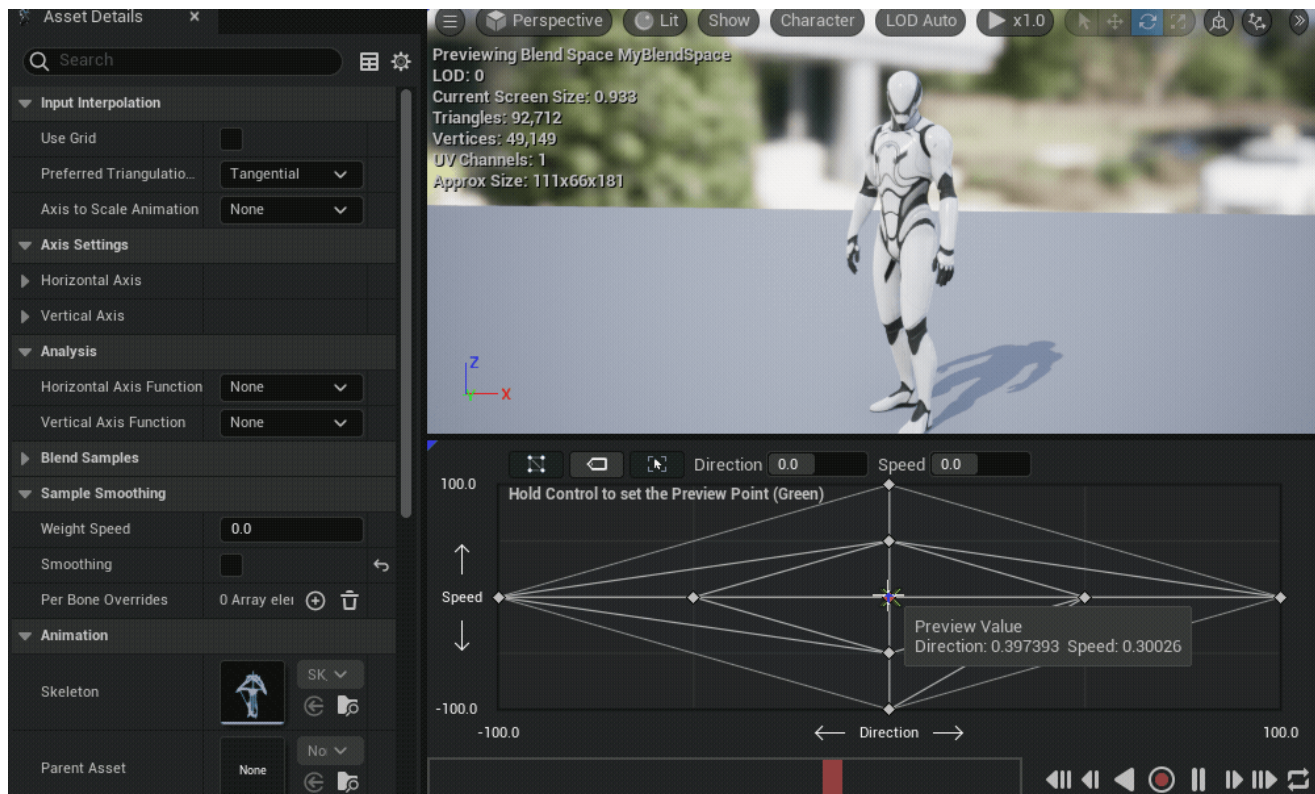
How an avatar walks in video game



How an avatar walks in video game

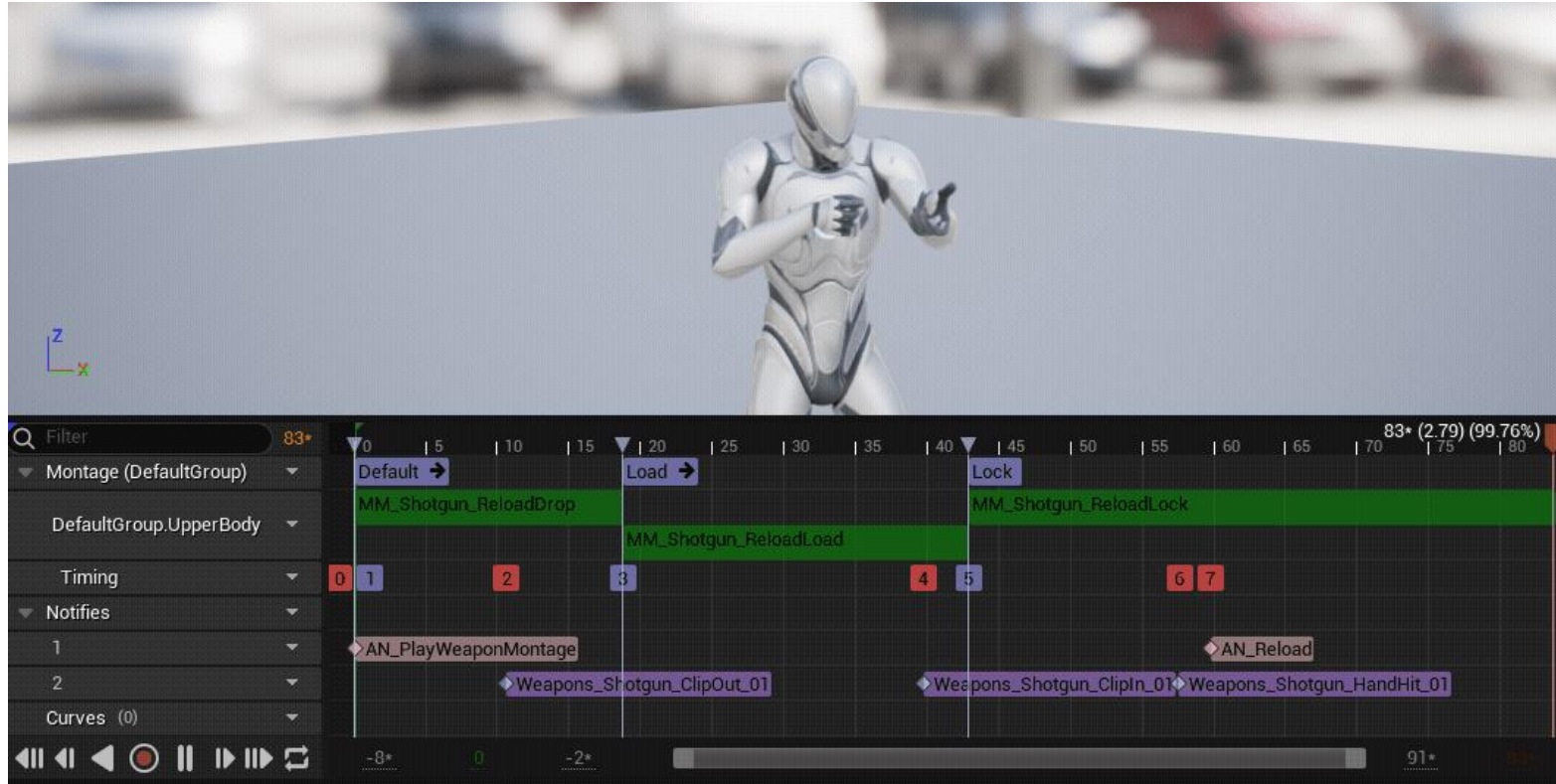


More complex puppets : Blend Space 2D

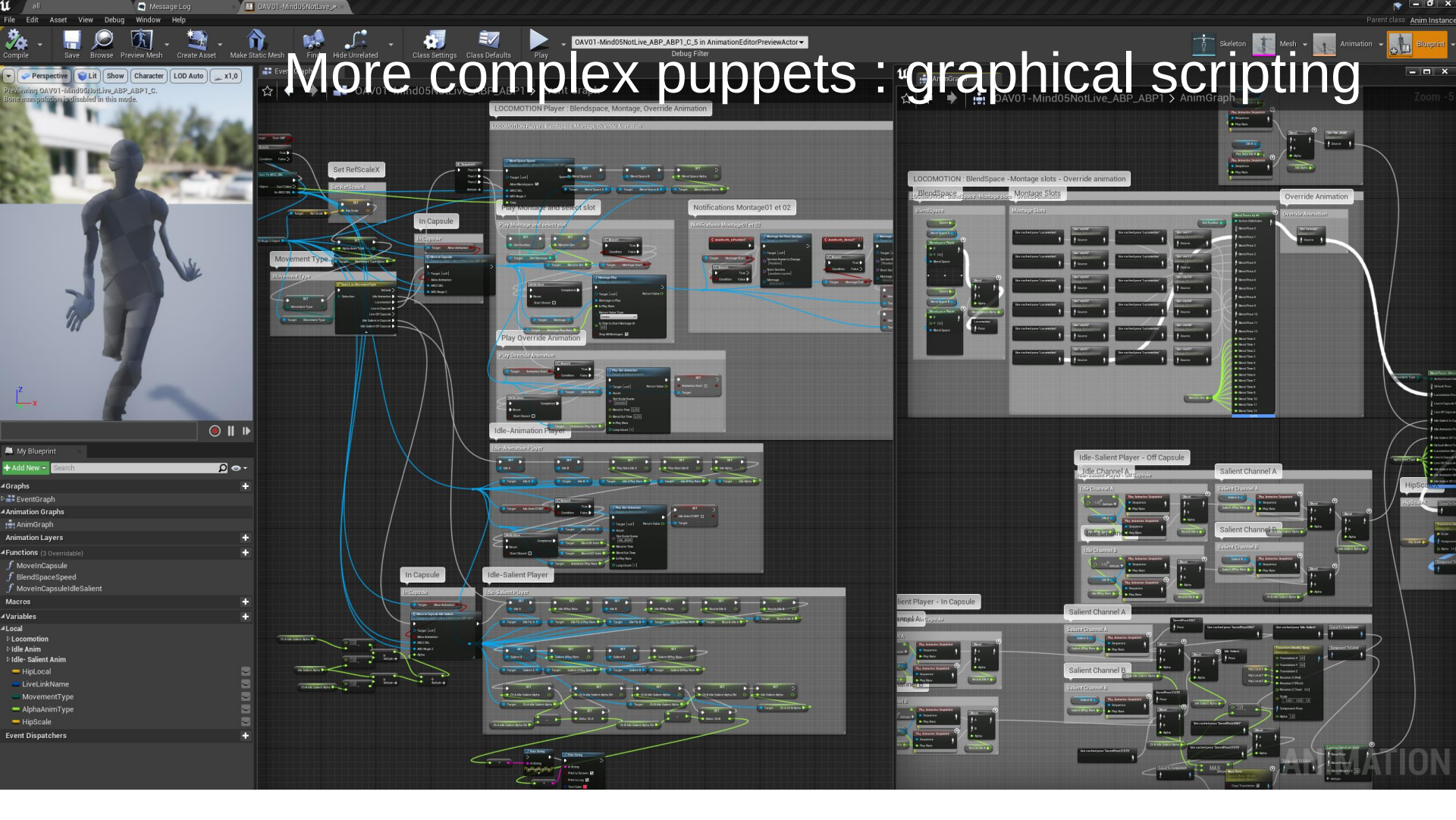


<https://docs.unrealengine.com/5.0/en-US/blend-spaces-in-unreal-engine/>

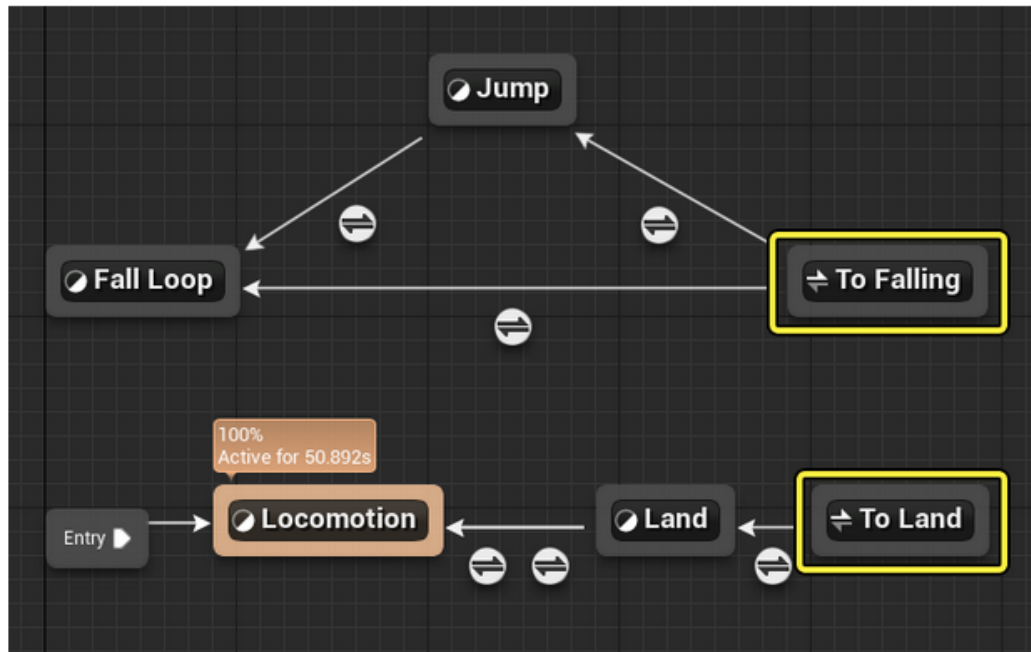
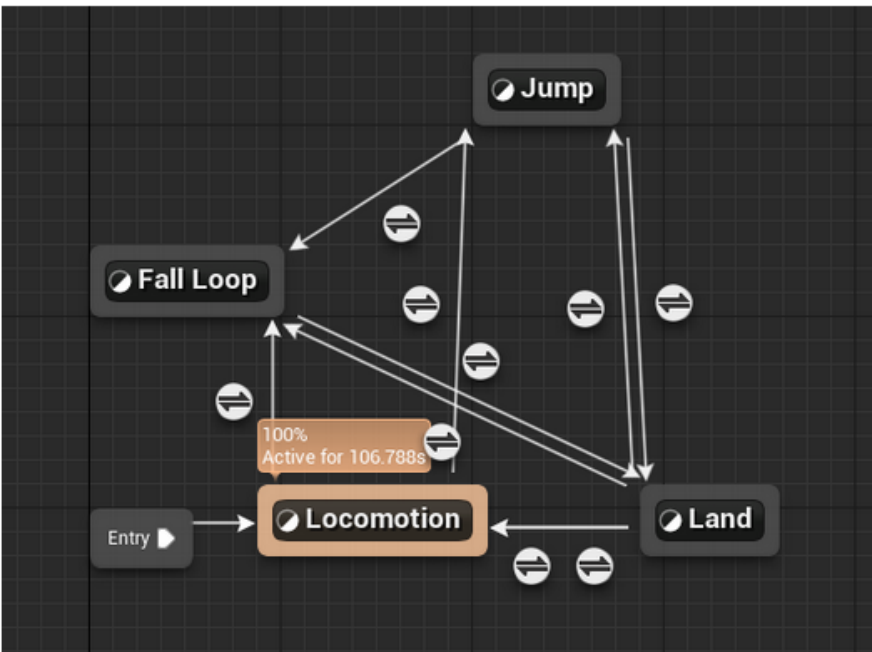
More complex puppets : Animation Montage



<https://docs.unrealengine.com/5.0/en-US/animation-montage-in-unreal-engine/>

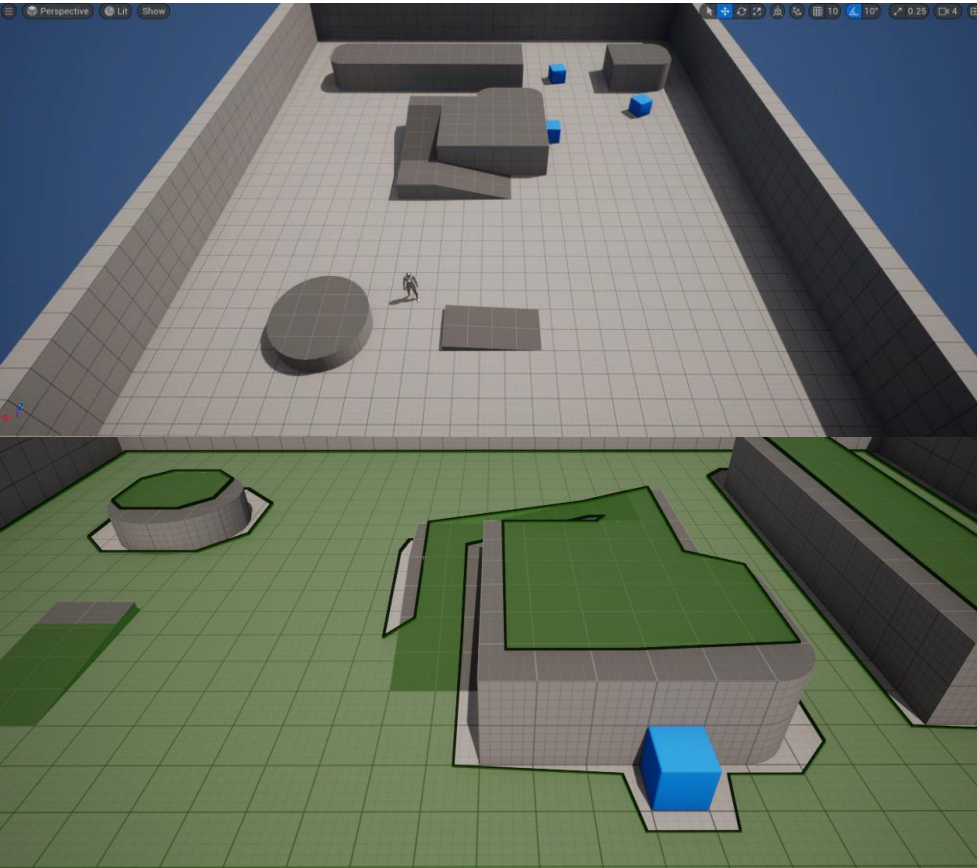


More complex puppets : Finite State Machine (FSM)



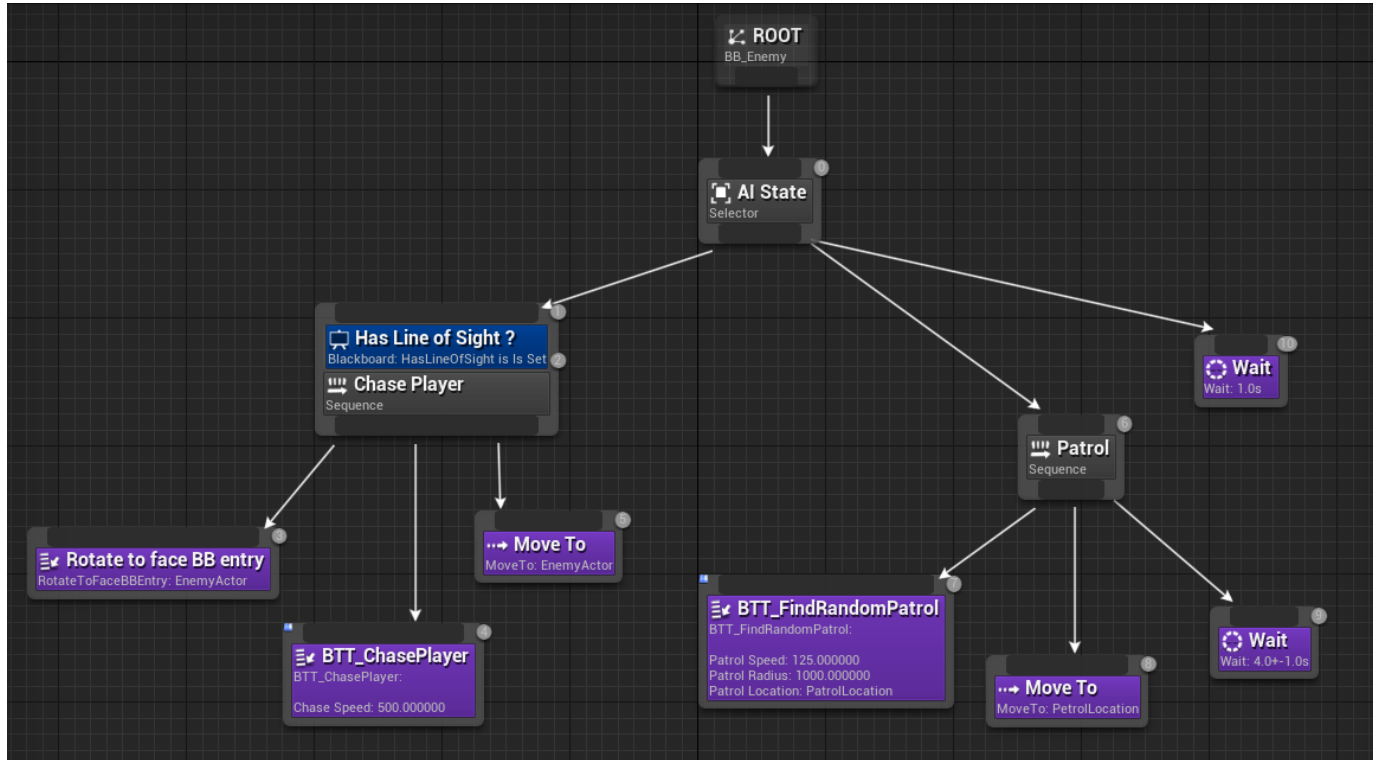
<https://docs.unrealengine.com/5.0/en-US/state-machines-in-unreal-engine/>

Towards a golem : AI for video games



<https://docs.unrealengine.com/5.0/en-US/basic-navigation-in-unreal-engine/>

Towards a golem : Behavior tree

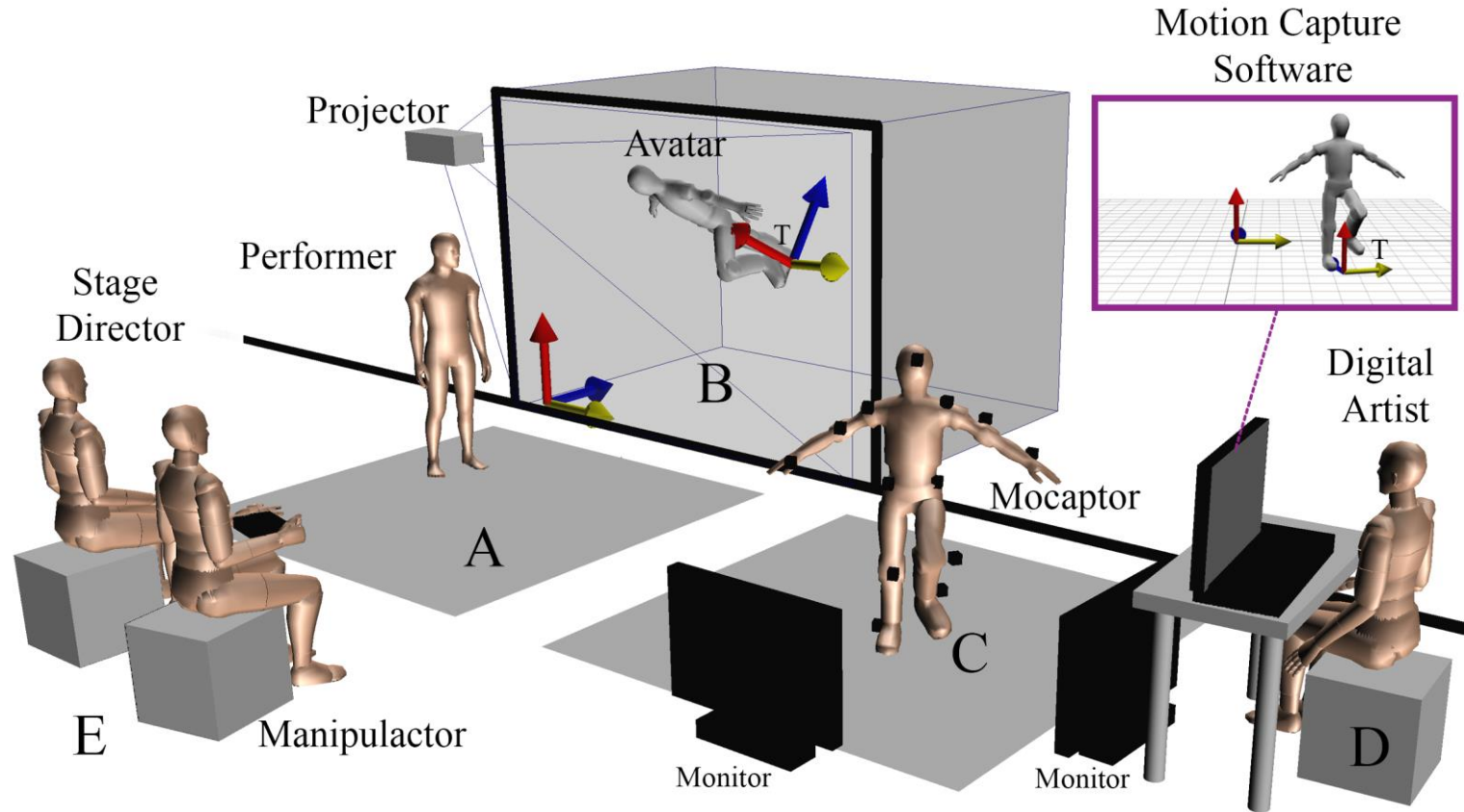


<https://docs.unrealengine.com/5.0/en-US/behavior-tree-in-unreal-engine---overview/>

Examples of avatars used on stage

- *The Tempest* (2016), by Shakespeare. Royal Shakespeare Company and Intel. <https://www.xsens.com/news/xsens-featured-in-groundbreaking-new-show-by-royal-shakespeare-company>
- *Dream* (2021), after *A Midsummer Night's Dream*, by Shakespeare. Royal Shakespeare Company and Manchester International Festival. <https://fxdigital.uk/our-work/dream-online/>
- *Mandala. A Brief Moment in Time* (2022). Sandman Studio, Digital Rise and Venice Immersive International Festival. <https://www.labiennale.org/en/cinema/2022/venice-immersive/mandala-brief-moment-time>

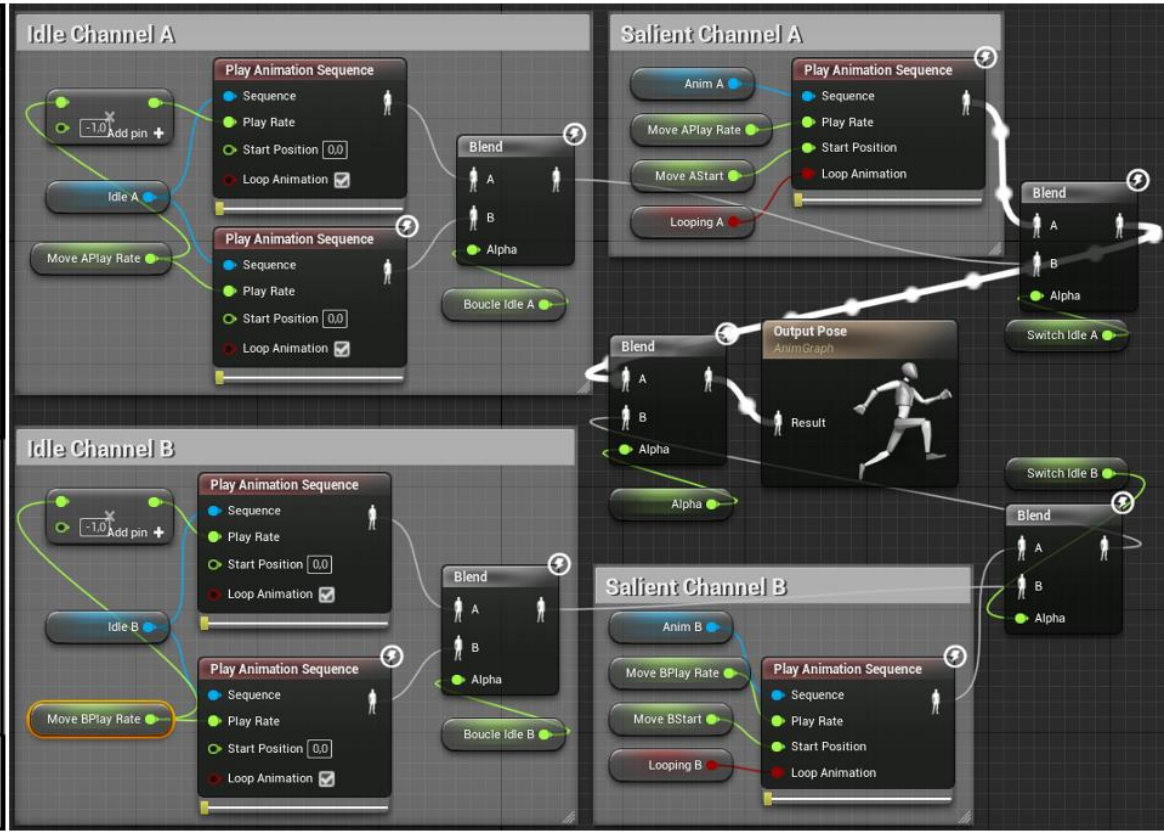
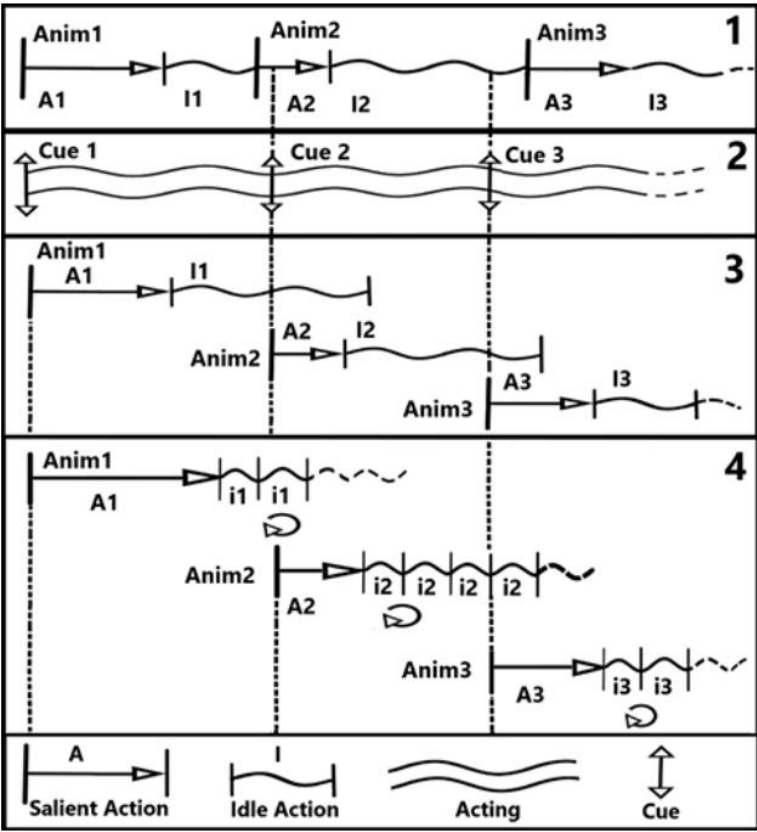
AvatarStaging and AKN_Regie Unreal Engine plugin

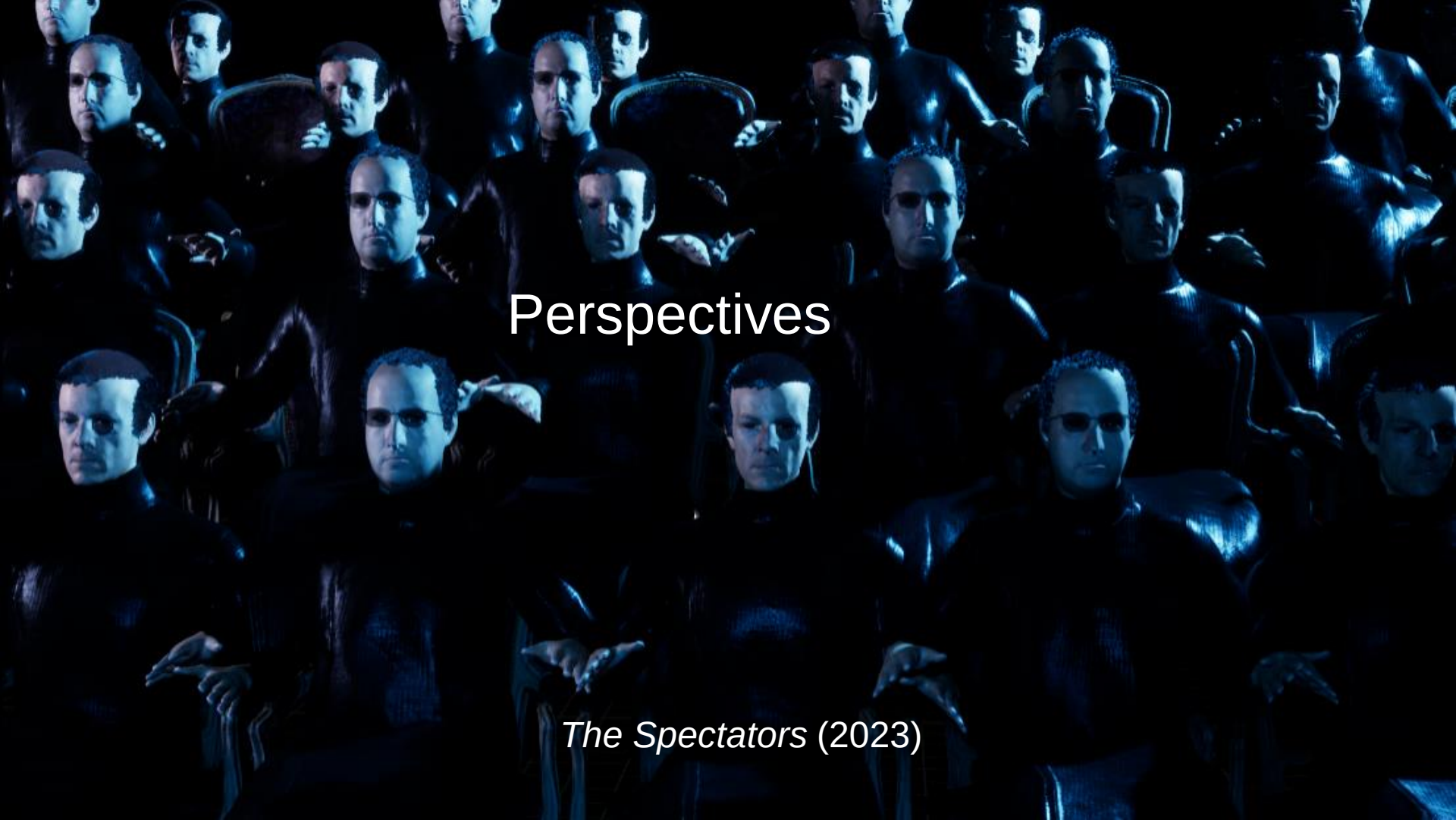




The Shadow (2019)

Directing avatars



A large group of identical men, resembling the Spectators from the movie 'The Matrix', are seated in rows. They are all wearing black suits and have serious, somewhat menacing expressions. The lighting is dark and moody, with a blueish tint. The men are arranged in a way that creates a sense of depth and repetition, filling the frame.

Perspectives

The Spectators (2023)

Thank you for your attention



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References

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- Sims K., «Evolving Virtual Creatures», *Computer Graphics (Siggraph '94 Proceedings)*, July 1994,15-22