

# Virtual stage management for immersive storytelling

## PhD Thesis Proposal

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### Context

This Phd thesis is proposed as part of an ongoing collaboration between the ANIMA team at Inria and the SPATIAL MEDIA team at EnsadLab (Ecole des Arts Décoratifs, Paris) on « directing immersive virtual reality ».

### Objectives

Immersive virtual reality is a powerful media for interactive storytelling, but computational tools are lacking both for authoring and controlling the experience. Drawing inspiration from theatrical storytelling [1] we would like to propose new methods for authoring and directing a virtual performance driven by a given play script, to be experienced in a virtual reality headset.

While previous work exists for structuring and executing a movie script in animation [2,3], immersive virtual reality raises additional challenges because both the player and the non player characters are free to move on the virtual stage. We therefore need new tools for managing the virtual stage, including monitoring the player movements, animating the non player characters, and synchronizing them while the story unfolds.

To reach those goals, the candidate will review « blocking notations » used in traditional stage management [4,5] and extract a subset of useful « cues » and « actions » that can be used to synchronize player and non-player characters performing a play script. He will design and implement algorithms for recognizing cues from player movements and generating actions for non player characters, in a timed petri net framework [6]. The proposed architecture will be tested and validated in immersive virtual reality storytelling experiments conducted by artists, researchers and students at EnsadLab during the thesis.

### Requirement

Strong background in real-time graphics programming and mathematics, excellent writing and speaking skills in French and English, and an interest in storytelling and virtual reality.

### References

1. Joe Geigel, Marla Schweppe. Theatrical Storytelling in a Virtual Space. ACM workshop on Story representation, mechanism and context, 2004.
  2. Dieter Van Rijsselbergen, Barbara Van De Keer, Maarten Verwaest, Erik Mannens, and Rik Van de Walle. 2009. Movie script markup language. ACM symposium on Document engineering (DocEng '09).
  3. Y. Zhang, E. Tsipidi, S. Schriber, M. Kapadia, M. Gross, A. Modi. Generating Animations from Screenplays. Joint Conference on Lexical and Computational Semantics, 2019.
  4. Peter Maccoy. Essentials of Stage Management. Routledge, 2004.
  5. Doris Schneider. The Art and Craft of Stage Management. Wadsworth Publishing, 1996.
  6. Louchka Popova-Zeugmann. Time and Petri Nets. Springer, 2013.
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