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# NUVE: In Between the Analog and Virtual Body

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**Abstract**

NUVE is an artistic project that aims to explore the artistic possibilities offered by the digital dance performances in the interaction between the individual and his virtual double. In NUVE we conceptualized, developed and implemented a digital artifact, resulting in a fluid digital performance based on the theme of the analog body versus the digital virtual body.

**Keywords**

Dance, performance, virtual double, generative.

**ACM Classification Keywords**

H5.2. User Interfaces. J.5. Arts and Humanities.

**General Terms**

Design, Experimentation, Human Factors.

**Introduction**

Contemporary art sets the scenery for a body exploration based on movements, actions and behaviors. Among the different crossings, the digital art is still under expansion on the dance domain. Despite the art of dance has appropriated a variety of new technologies, it is still a domain to explore with the potential at an aesthetic and at an artistic level.

NUVE emerges from a line of work being developed by the first author [1] that explores full body interaction

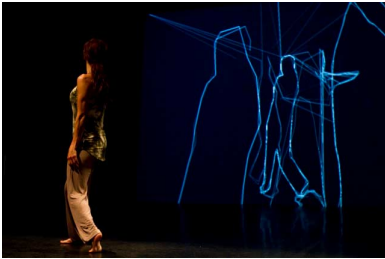
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and expressive gestures to compose immersive audio and visual flows supporting artistic expressiveness. In the author's previous work physical expressive gestures are rendered in digital compositions formed by musical and visual movements, composing an enriched audio-visual experience [2].

### Concept

In NUVE the body is the first engine of action, but the choreographic body evolves into a relation with its own "virtual double" in a way to create a dialog challenging the choreographic boundaries and adding new dimensions to the gesture. Throughout the choreography a tension is built between the performer's silhouette and the "virtual double". At some stage in the narrative, the "virtual body" detaches itself from the performer and the choreography evolves, the "virtual double" is no longer shadowing the performer but in a way seems to gain life from him/her and both perform together.



Photos: balleteatro@LuisFerraz

Performances videos at  
<http://nuve.jmartinho.net/tei2011>

NUVE follows the line of generative digital art, composing in real-time ever evolving visual scenarios that flow with the performer movement and gesture contrasting light and darkness, body and gestures, real and digital. The audio and visual sequences of the narrative are pre-established to follow the created choreography.

### Implementation

NUVE is developed with the openFrameworks [3] platform, an open source C++ programming language toolkit. It relies on an infrared firewire camera to capture the image of the stage 30 frames per second. Appropriately infrared lights are employed to obtain the

best possible image of the dancer. A combination of standard image processing techniques is then used to capture the silhouette and the movement of the performer. At some points during the choreography the performer interacts with a particle based system that flows in the scene. This seamless interaction between the full body of the dancer and the virtual particles is possible by computing the different speed of the different areas of the body and feeding it those to the particles physics system.

The sound composition was created with the software SuperCollider, a system to program generative sound [4]. In opposition to previous work [1] in this project the audio is not generated in real-time, instead the sound aesthetics was carefully crafted specifically for NUVE.

### Conclusion

NUVE project is an example of the synergies among the various facades of creativity, being it the performance, the visual, the audio and the technological, brought together in a coherent and complementary fashion and seeking the poetics that can result when the languages of arts and the technology mutually comprehend.

### References

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