

Bringing Together Interactive Digital Storytelling with Tangible Interaction: Challenges and Opportunities

Alejandro Catala¹(✉), Mariët Theune¹, Cristina Sylla², and Pedro Ribeiro³

¹ Human Media Interaction, University of Twente, Enschede, The Netherlands
{a.catala,m.theune}@utwente.nl

² Center for Child Studies/engageLab, University of Minho, Braga, Portugal
sylla@engagelab.org

³ Rhine-Waal University of Applied Sciences, Kamp-Lintfort, Germany
Pedro.Ribeiro@hochschule-rhein-waal.de

Abstract. This workshop aims to explore challenges and potential opportunities in bringing interactive digital storytelling into the realm of tangible and embodied interaction. To this end, experts from both fields are invited to present and discuss their ideas. Besides fostering discussion and potential collaborations, the goal is to come up with new and suitable computational storytelling models and define design guidelines/strategies.

Keywords: Storytelling · Tangible interaction · Intelligent systems · Computational models

1 Description of the Workshop

1.1 Background and Goals

The emergence of tangible interaction and physical interfaces as a new interaction paradigm provides rich interactive spaces that are close to our senses and our way to understand the real world. We expect that including tangible or physical affordances in interactive storytelling settings will be commonplace in the future, bringing potential opportunities to improve storytelling tools, as well as the quality of the related user experiences by going more physical. However, using tangible objects for storytelling can be demanding and bring additional research challenges, as such digital/physical tools expand the boundaries of the system beyond the digital space where computations typically take place. For example, while interactive storytelling systems in virtual environments are based on elaborated narrative models that build on artificial intelligence, therefore facilitating the development of more complex story plots, tangible and embodied storytelling systems rely less on computational story modeling, and instead focus primarily on free story creation and play (e.g. [2,4]). We envision that ideally, a system

should combine the affordances of both modalities, this is, provide physical interaction and a good story. An example is the TOK interface [5], which combines physical elements with story creation. Here, the story world was designed using behaviour trees (BTs) and modelled to bring a certain degree of surprise in the unfolding of the narrative. Another significant research effort combining tangible interfaces with artificial intelligence for producing emergent narratives is shown in [1]. As well, there are examples of systems with pre-scripted narrative such as the work in [3]. However, the development of such systems is challenging, and there are many open questions, such as:

- How can we bring digital interactive storytelling and storytelling with tangible objects together?
- How can we effectively include autonomous and intelligent tangible characters (e.g. small robots or active tangibles) when designing storytelling settings?
- How can we embed computational models (typically working in virtual environments) into tangible interfaces?
- Which are the advantages and current limitations of existing systems?

In order to explore these issues, our community needs to reflect on the implications of embedding tangible elements in storytelling systems and discuss how to combine tangible interfaces with narrative models and computational intelligence. With this goal in mind, this workshop aims at getting deeper insights in the field by bringing together experienced researchers and practitioners from the tangible and embodied interaction fields, and digital interactive storytelling communities, to share experiences and foster discussion on these topics. Further, the expected outcome is that this workshop contributes to start possible research collaborations, which lead to new computational storytelling models specifically focusing on tangible and embodied interaction, and design guidelines and/or strategies. Joint publications reporting the cluster discussions will be sought and encouraged.

1.2 Call for Participation

Participants are encouraged to share their experiences and vision on bringing digital interactive storytelling and tangible storytelling together by submitting a short informal position paper (1–3 pages in the Springer LNCS format).

Topics of special interest that would positively feed the development of the workshop are, for example:

- Tangible interaction and interfaces for storytelling systems
- Storytelling with intelligent embodied characters (e.g. robots, hybrid agents, etc.)
- Tangible autonomous characters
- Computational intelligence applied to storytelling with physical interfaces
- Other forms of relevant and novel tangible expression for interactive storytelling

Prospective participants interested in presenting a contribution are expected to fill in a participation form and submit an abstract and a position paper.

IMPORTANT DATES:

- September, 20th: abstract submission (1/2 page; max. 500 words)
- September, 28th: notification of abstract acceptance
- October, 15th: submission of position papers (1–3 pages in the Springer LNCS format)

The submission process will be managed through the workshop's website (<https://www.utwente.nl/ewi/hmi/cobotnity/icids2017tangibleworkshop/>). Accepted papers will be made available internally to all the participants before the workshop in order to prepare the joint sessions effectively. Possibilities for a prospective publication as an outcome of the workshop contributions will be announced in the workshop. In particular, we plan to call for extended papers to be published in a special issue or a post-proceedings publication.

1.3 Format and Schedule

The contributions will be presented during the workshop, in the form of a short talk, an interactive demo, or a video showcasing some prototype. The participants can choose the format that best suits their contribution/material, although the last two types are encouraged. The aim of having the presentations is two-fold: help to identify primary challenges, opportunities, constraints and limitations; and serve as input for a discussion and design session in which participants will collaborate in small groups or clusters. We expect to gather a maximum of 15 participants, which would lead to 3–4 design clusters groups. In the design session, the clusters are expected to pick a challenge and specific constraints (e.g. domain, target users, technology limitations...), identify limitations and opportunities, and work together to propose a design of a storytelling prototype that would allow to start exploring or addressing current limitations. Finally, the clusters will share their results and a joint discussion will be carried out in order to define design guidelines/strategies and decide on specific actions to consolidate future collaborations.

The workshop will (tentatively) be scheduled as follows:

- 13.30–15.00 Introduction, Talks/Demos
- 15.00–15.15 Break
- 15.15–16.10 Cluster work
- 16.10–17.00 Sharing, Joint Discussion and Conclusion

1.4 Equipment and Resources

The additional materials needed are a projector, a projection screen, tables that can be re-arranged according to the number of participants, and paper sheets and pens to boost design discussions. Depending on the nature of some demos, some wall power supplies may be needed to connect laptops or similar devices.

2 Organizers

The organizers have together a mixed background on diverse areas such as interactive storytelling, virtual actors/characters, virtual agents, tangible and embodied interaction, human computer-interaction, artificial intelligence and computational linguistics. Such combination is beneficial to ensure that different perspectives are present in the design sessions during the workshop.

Alejandro Catala (a.catala@utwente.nl), Human Media Interaction, University of Twente, The Netherlands

Mariët Theune (m.theune@utwente.nl), Human Media Interaction, University of Twente, The Netherlands

Cristina Sylla (sylla@engagelab.org), Center for Child Studies/engageLab, University of Minho, Portugal

Pedro Ribeiro (Pedro.Ribeiro@hochschule-rhein-waal.de), Rhine-Waal University of Applied Sciences, Germany

You can address your questions and your interest in participating to Alejandro Catala by email.

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