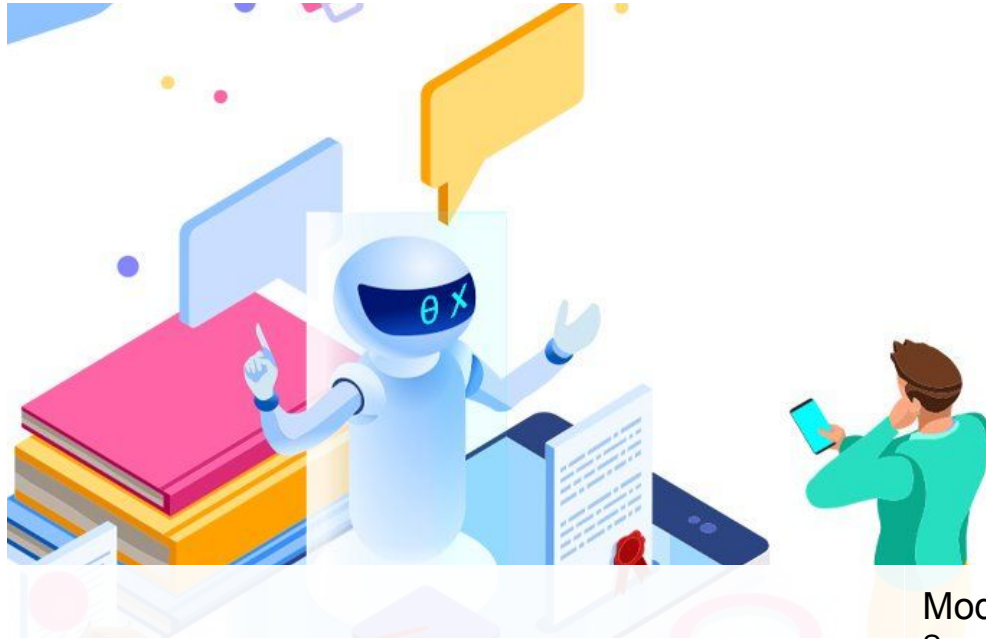


HRI Reading Group

@ Instituto Superior Técnico
Spring 2019

Meeting #14 (June 21, 2019)

Personalization and Adaptation



Chapter 7 of the book:

DÖRNER, Ralf, et al. (ed.). *Serious games: foundations, concepts and practice*. Springer, 2016.

Authors:

Stefan Gobel and Viktor Wendel

Moderator:

Samuel Gomes

Organizers:

Patrícia Alves Oliveira, Silvia Tulli

Personalization vs Adaptation

1



Personalization vs Adaptation

User-directed game development concepts



Personalization:

“In the context of games, often the term personalization is used for a (static) one-time adaptation of a gaming aspect to the needs or preferences of a user, (...)”



Adaptation:

“(...) adaptation refers to the continuous adjustment of the game based on the actions and performance of a user and the current state of the game towards a desired state”

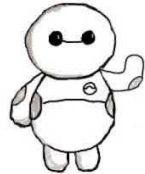
Personalization vs Adaptation

What is your opinion about the definitions given by the authors?
How can the concepts be approached in HRI?

- The definitions are not clear
- Personalization is related to your profile (prior data)
- Adaptation is adjusted dynamically

In the HRI context:

- Example: Astro was **adapted** to what the child was doing. The predefined behavior has been adapted to the child during the interaction
- Continuous adaptation of the embodiment? Is it possible? (baymax)
- What is adaptation? Is a behavior that is trigger by something?

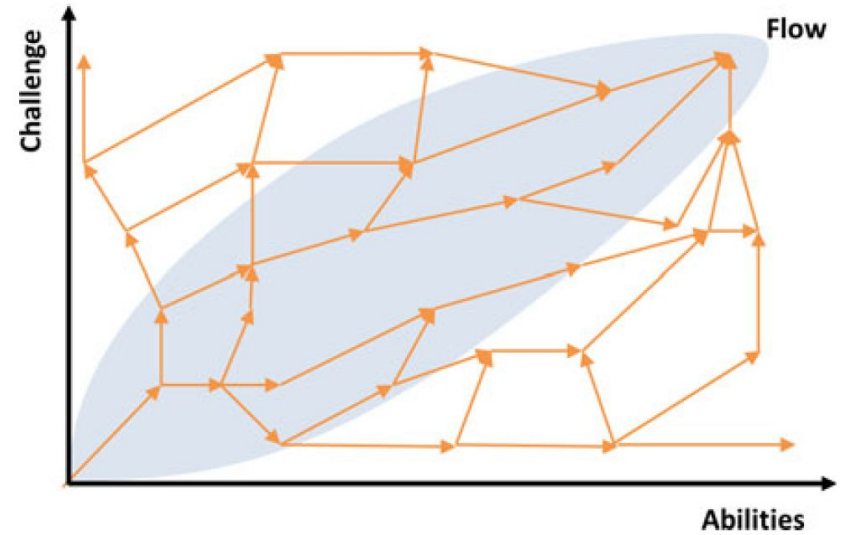
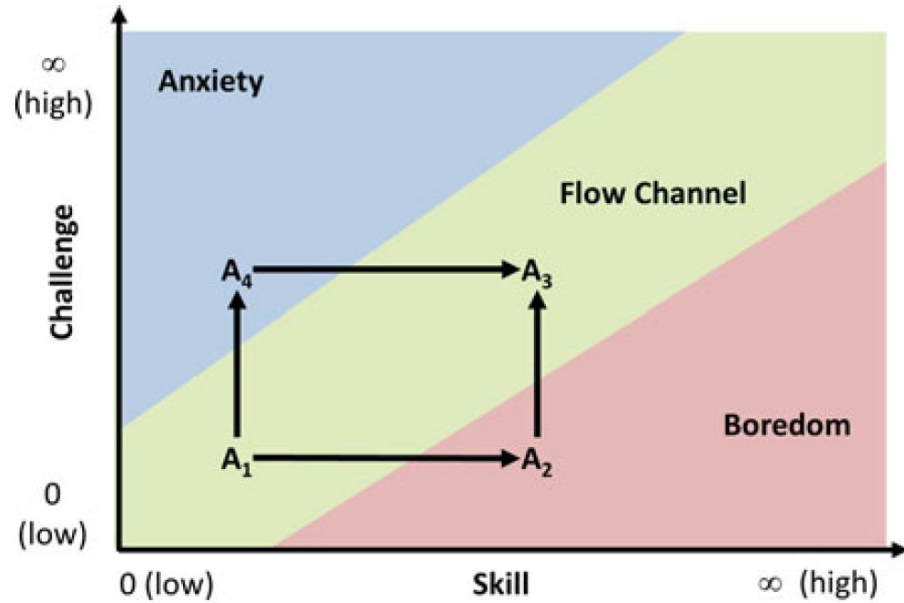


Dimensions and Mechanics

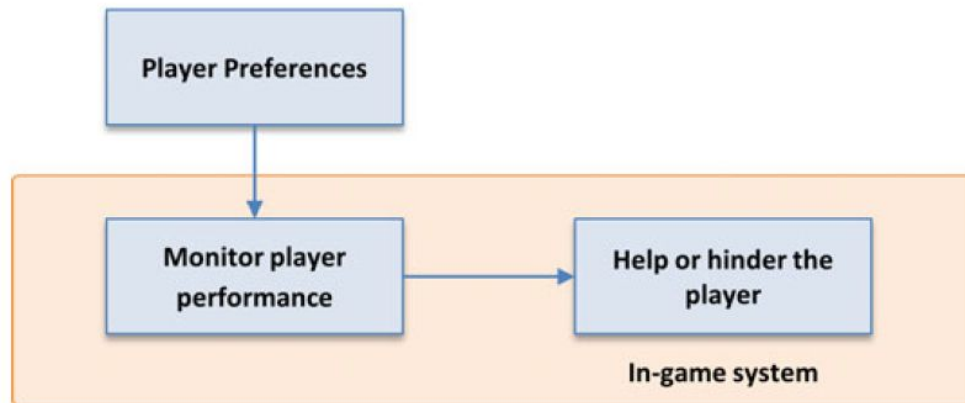
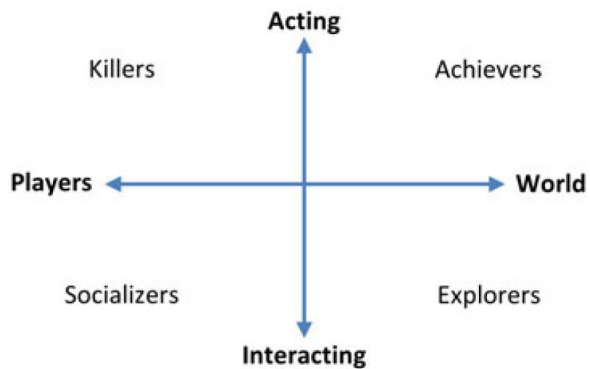
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Difficulty Adaptation

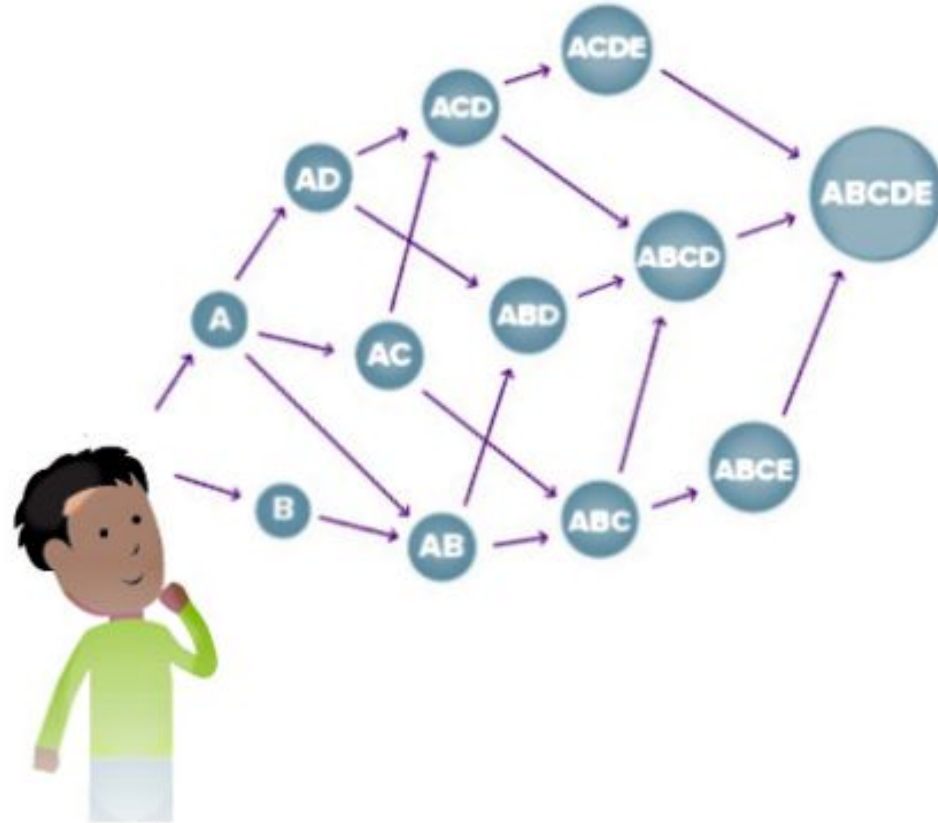


Player modeling



$$traitValue = \alpha \cdot observedValue + (1 - \alpha) \cdot traitValue$$

Learner Modeling (Knowledge Space Theory)



Dimensions and Mechanics

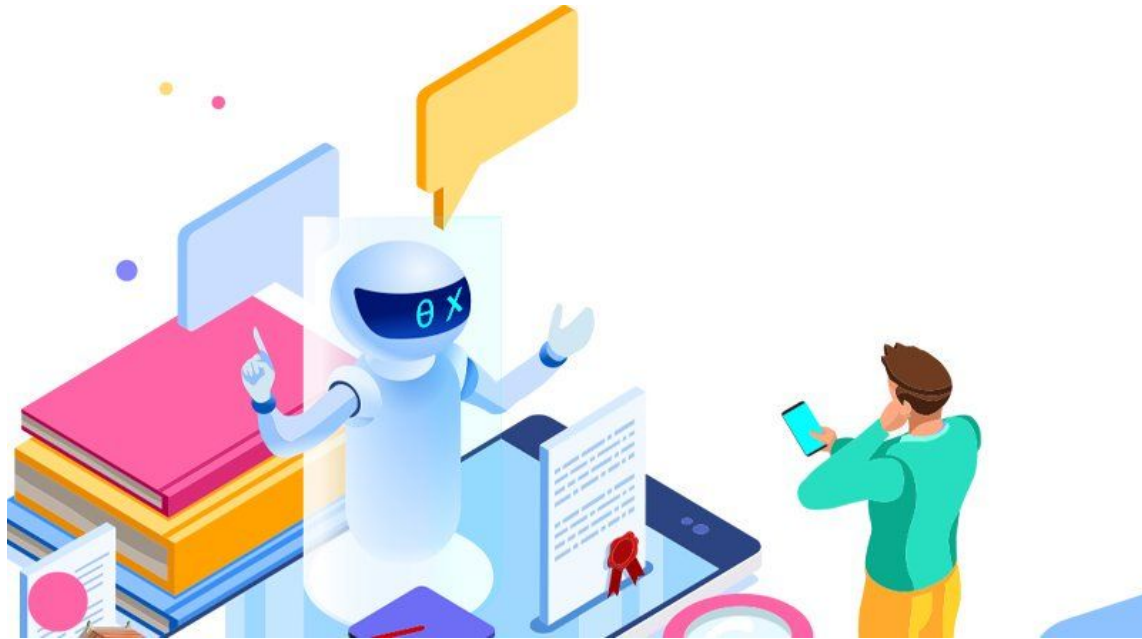
HRI/ other HCI ways of approaching:

- Difficulty/Expertise adaptation
- Player/Human Modeling
- Learner Modeling

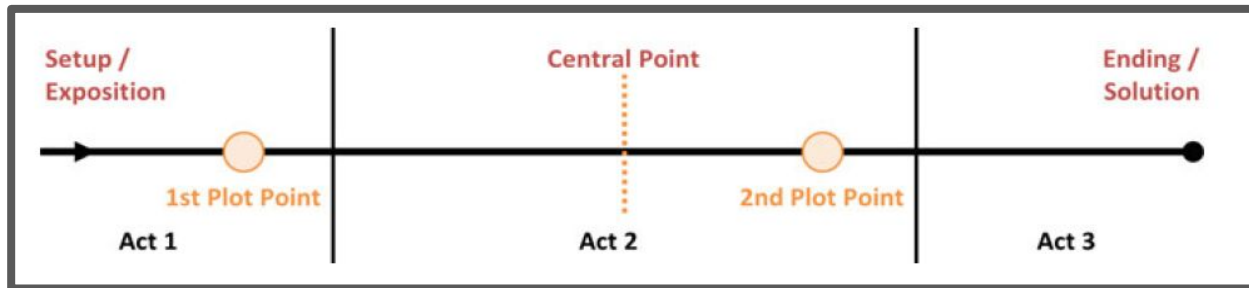
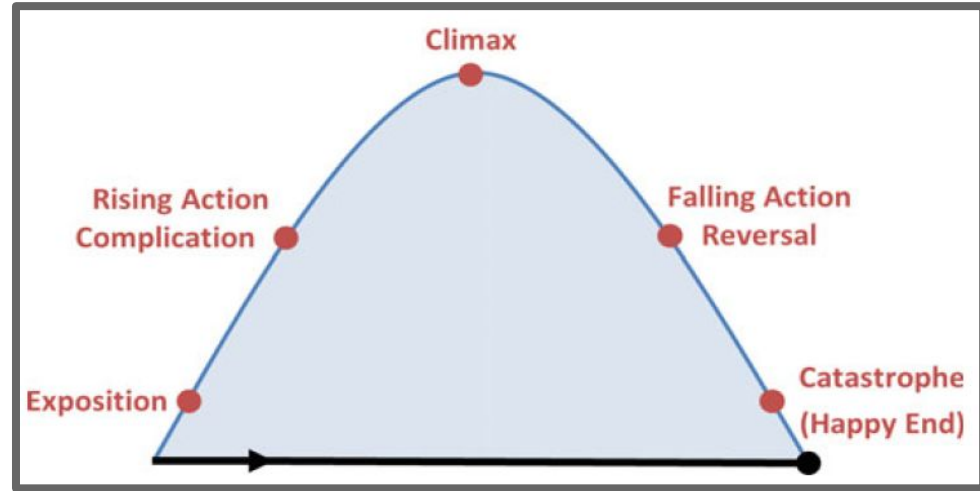
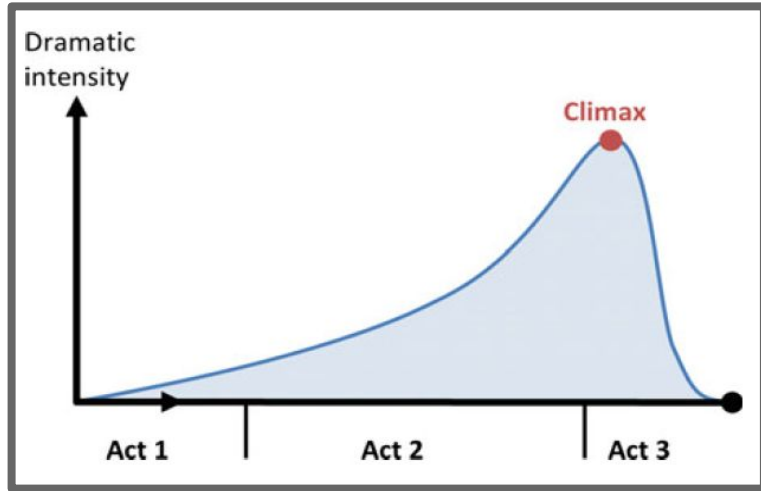
- It is difficult to use the presented learning model in the context of HRI. Do you need a challenge? Why would the robot hinder the human?
- Changing the interaction path of the robot following a flow (challenge and abilities are balanced)
- In the HRI context the flow can be translated in the level of engagement
- In a social robot is not intuitive to say what is actually more challenging for improving an abilities
- Challenges are different in the game context and in an HRI context. In the game context players expect to be challenged more.
- Machine teaching can be a way to adapting examples to the student
- Compositional tasks
- Transparency adaptation - give the right amount and type information

Adaptive Storytelling

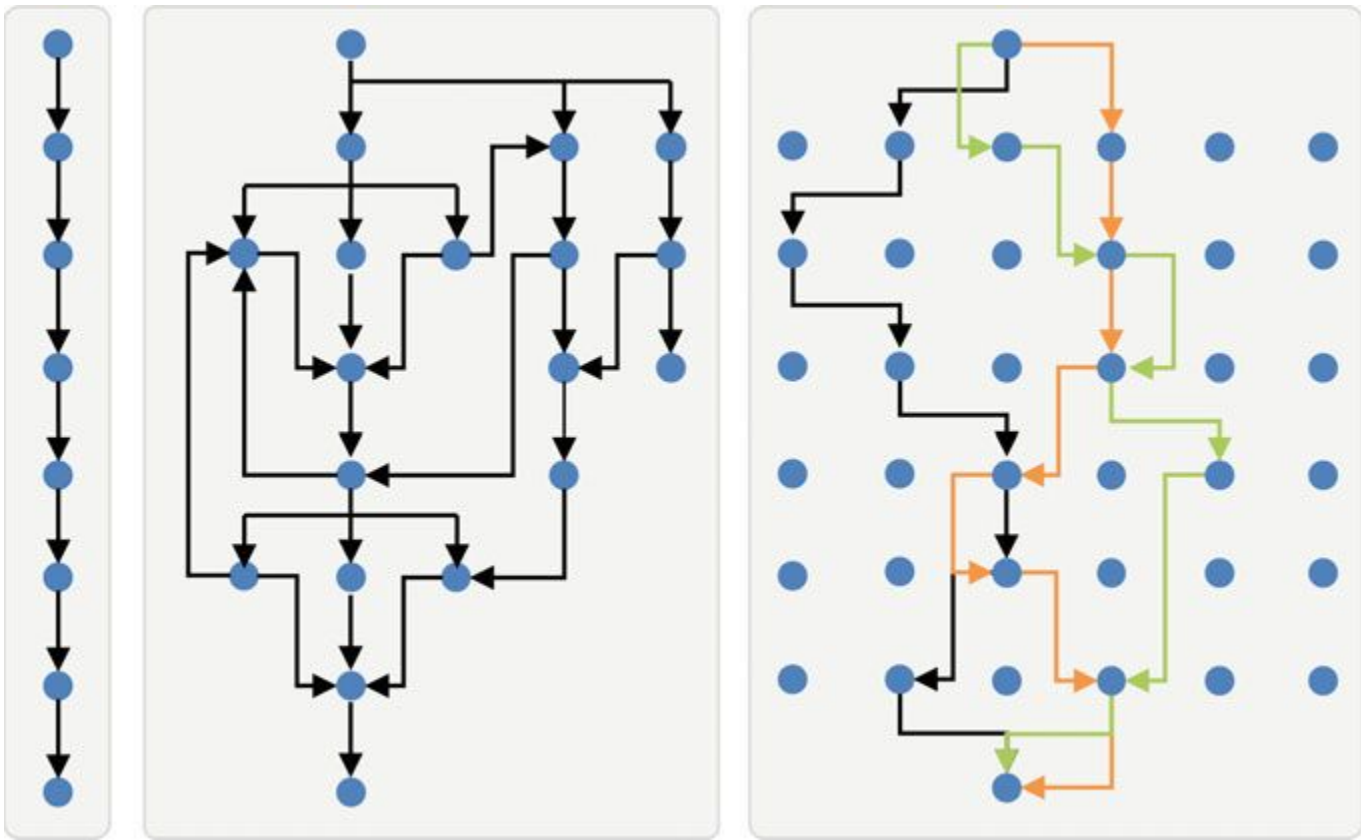
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Story arc models



Interactive Storytelling



Interactive Storytelling

Storytelling and games fundamentally differ from each other, with a conflict between narration and interactivity

This leads to the **narrative paradox**

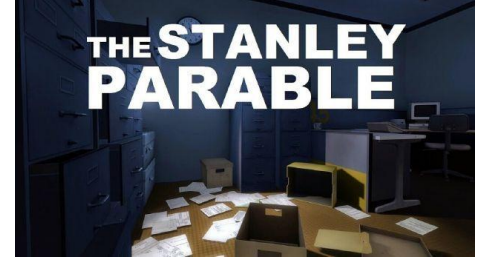
Approaching the narrative paradox: Façade



Dimensions and Mechanics

Storytelling Applications in HRI/ other HCI

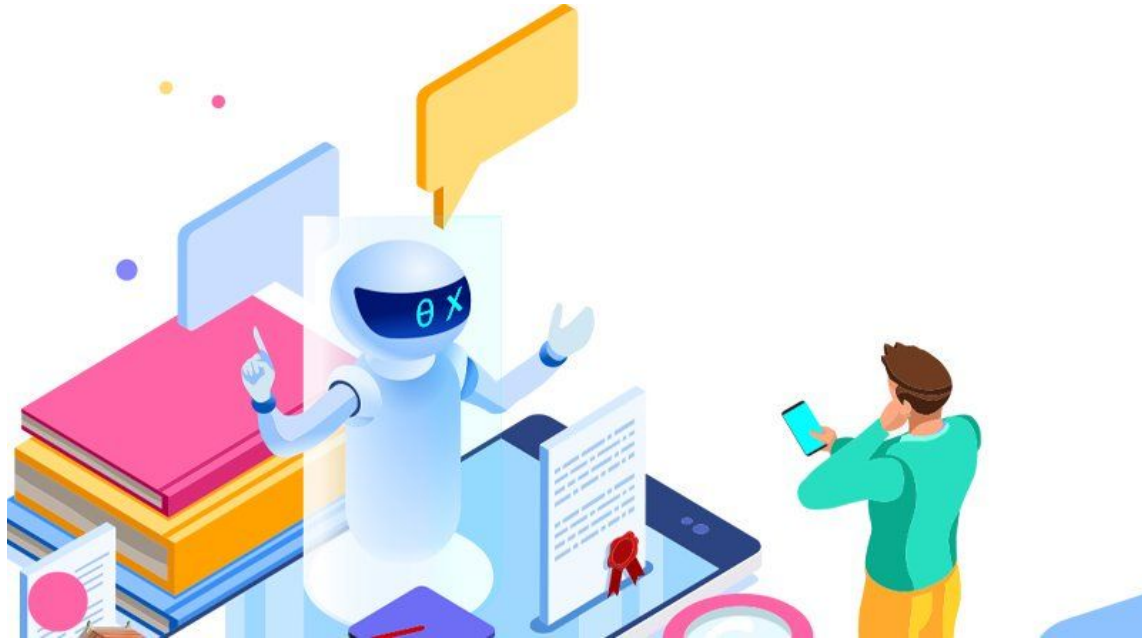
- Storytelling branching works well for games but not for interactive media
- Patricia's robot defines the story with its behavior (that depends by the user)
- Raul's story changes in relation to the user's choices



Façade Demo Time



The End!



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Meeting #15 (28 June 2019)

Invited Moderator - Raquel Oliveira