Narratives and Interactive Storytelling

Lecture 03 – Narrative Dramatization

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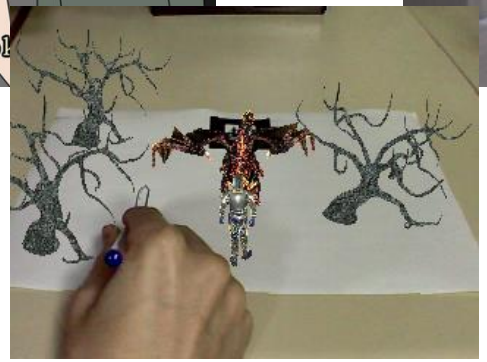
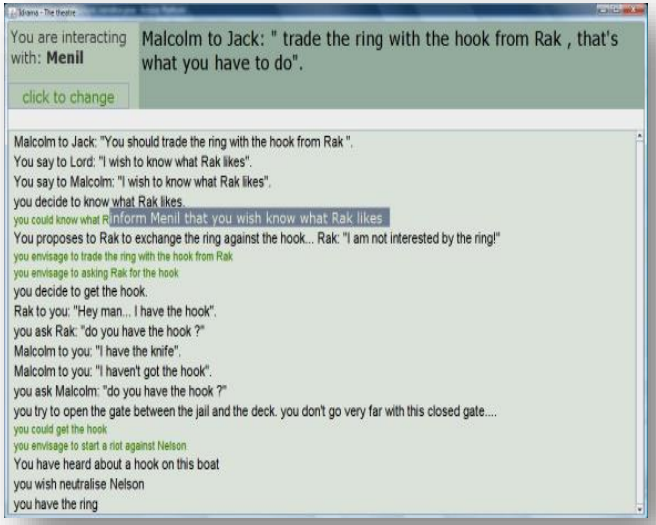
Narrative Dramatization

- **What is narrative dramatization?**
  - The visual representation of a narrative.
  - There are many ways to create a visual representation for a narrative using different media formats (text, images, videos, 2D/3D animations, comics, virtual reality, augmented reality…)



Dramatization Methods: Text

- **Text:**
  - Involves the translation the logical events of the narrative into natural language sentences.
  - **Example:** kidnap(Draco, Marian)
    - *"... the princess Marian was kidnap by the terrible villain Draco..."*
  - It requires natural language processing techniques to guarantee the **logical coherence** of the generated narrative text.
    - Simplified solution: text templates



Examples of systems:

- Tale-Spin (1977)
- Universe (1984)
- Minstrel (1992)

Templates for Text Generation

- Save(CH1, CH2)
  - "*After a great act of bravery, CH1 saves the life of CH2.*"
- Save(Brian, Marian)
  - "*After a great act of bravery, Brian saves the life of Marian.*"
- Save(Hoel, Marian)
  - "*After a great act of bravery, Hoel saves the life of Marian.*"

Dramatization Methods: 2D/3D Computer Graphics

- **2D/3D environments:**
  - Involves the translation the logical events of the narrative into actions performed by virtual characters.
  - Actions are represented by animations and character movements.
  - **Challenges:**
    - How to control characters (movement and behaviors)?
    - How to control cameras dynamically?
    - How to create engaging visual dramatizations?

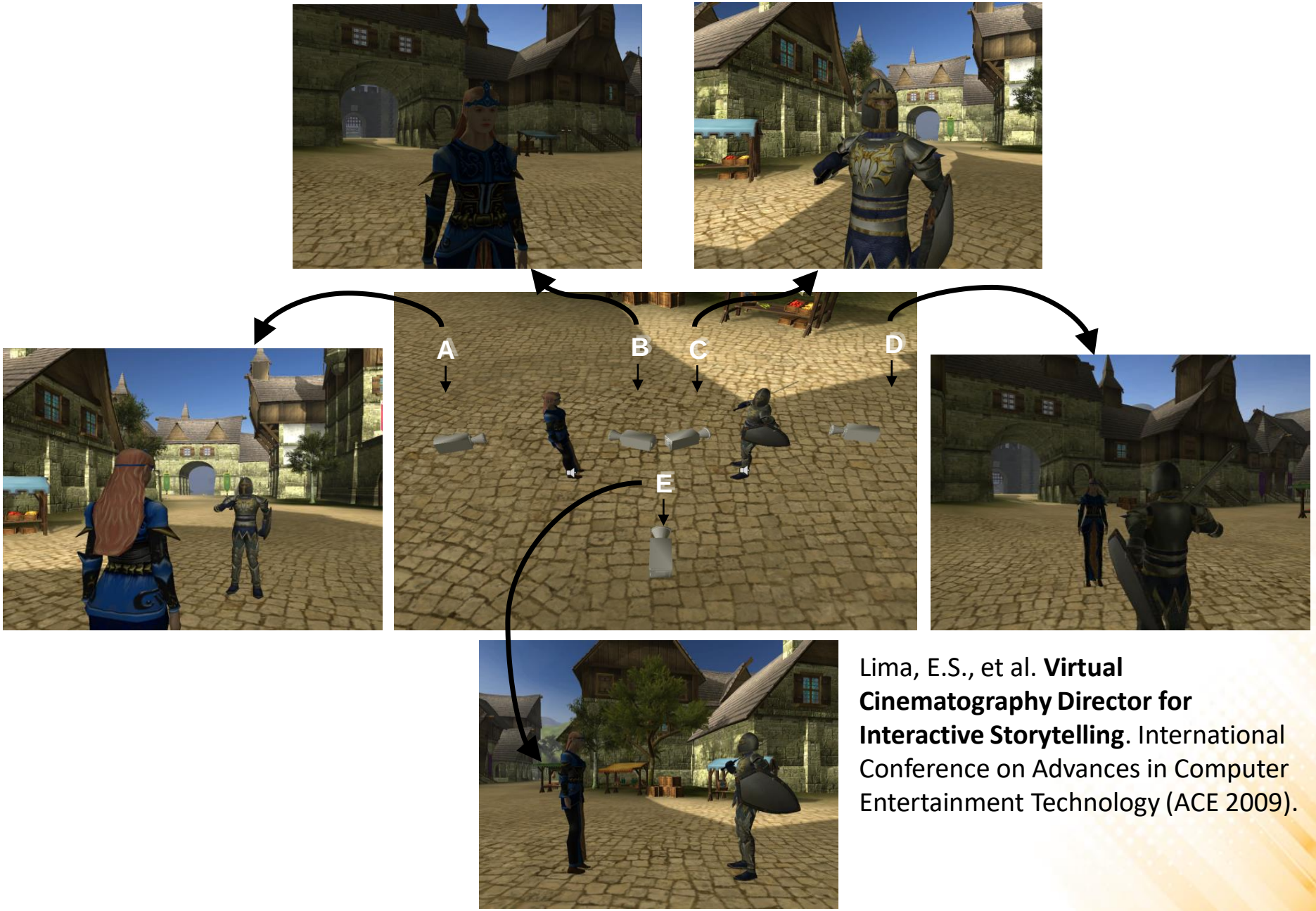
Examples of systems:

- Façade (2002)
- Madame Bovary (2003)
- Logtell (2010)
- Heavy Rain (2010)

Camera Control in Interactive Storytelling

- The cameras should work like the cameras used in games?

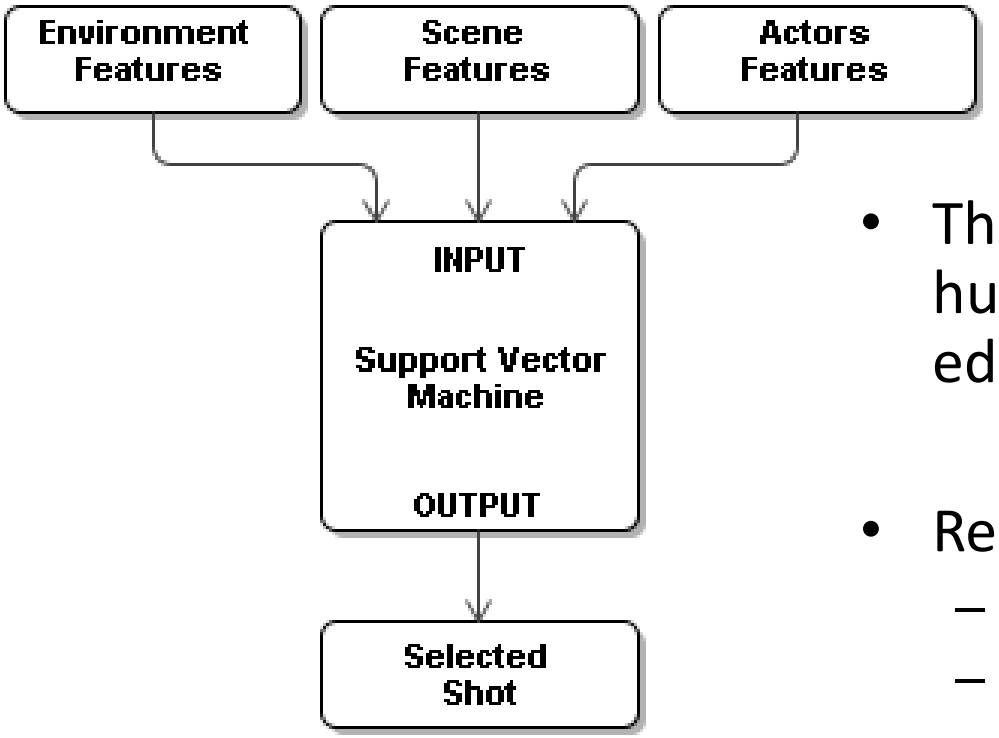
- No!
  - It requires more robust camera control methods.
  - The camera must behave like the ones used in films.



Lima, E.S., et al. **Virtual Cinematography Director for Interactive Storytelling**. International Conference on Advances in Computer Entertainment Technology (ACE 2009).

Camera Control

	Feature 1	Feature 2	Feature 3	Feature 4	...	Best camera
Sample 1	A1_happy	A2_happy	A1_talking	A1_xPos	...	Cam B
Sample 2	A1_happy	A2_sad	A2_talking	A1_xPos	...	Cam C
...	...					



- The system can be trained by human experts (directors, editors...)
- Results:
  - Accuracy: 98%
  - Processing time: < 1 ms
  - Video

Visual/Audio Effects

Sadness

Anger

Fear

- The system can be trained by human experts (directors of photography...)
- Results:
  - Acurracy: 96%
  - Processing time: < 1 ms
  - Video

Tension

Lima, E.S., et al. **Director of Photography and Music Director for Interactive Storytelling**. IX Brazilian Symposium on Computer Games and Digital Entertainment (SBGames 2010).

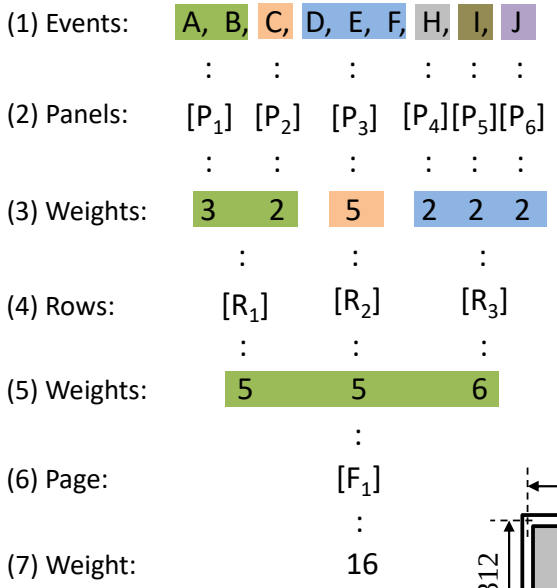
Interactive Comics

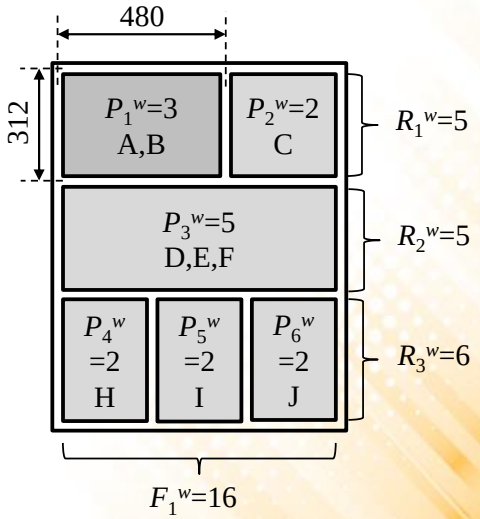
- 2D dramatization using the style of comic books;

Lima, E.S., et al. **Non-Branching Interactive Comics**. International Conference on Advances in Computer Entertainment Technology (ACE 2013).

Interactive Comics

- 2D dramatization using the style of comic books;
- Page definition:
  - Event grouping;
  - Panel size;

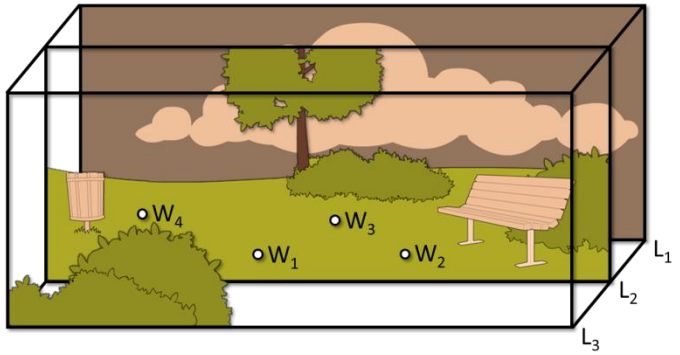


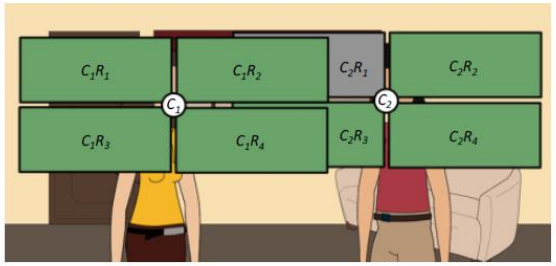


Lima, E.S., et al. **Non-Branching Interactive Comics**. International Conference on Advances in Computer Entertainment Technology (ACE 2013).

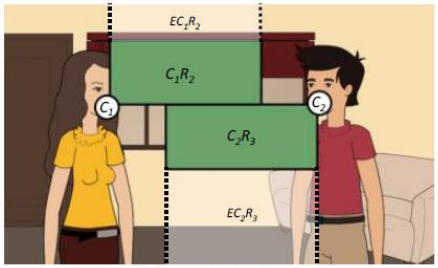
Interactive Comics

- 2D dramatization using the style of comic books;
- Page definition:
  - Event grouping;
  - Panel size;
- Panel compositing:
  - Character placement;
  - Speech balloon placement;





(Step 1) Region Selection and Occlusion Detection



(Step 2) Reading Order Arrangement

(Step 3) Balloon Generation and Placement

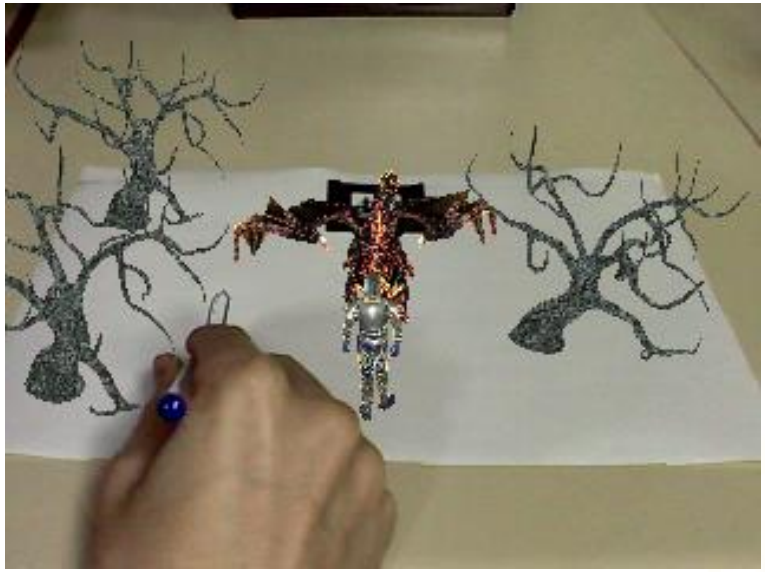
Lima, E.S., et al. **Non-Branching Interactive Comics**. International Conference on Advances in Computer Entertainment Technology (ACE 2013).

Dramatization Methods: Augmented Reality

- Involves the translation of the logical events of the narrative into actions performed by virtual characters in a augmented reality environment.

- Actions are represented by animations and character movements.

- **Challenges:**
  - How to control characters (movement and behaviors)?
  - How the virtual objects/characters interact with the real world?
  - User interaction?



Examples of systems:

- AR Façade (2006)
- wiz Qubes (2008)
- Paper and Pencil IS (2014)

Dramatization Methods: Virtual Reality

- Involves the translation of the logical events of the narrative into actions performed by virtual characters in a virtual reality environment.

- Actions are represented by animations and character movements.

- **Challenges:**
  - How to control characters (movement and behaviors)?
  - How users interact with the virtual objects/characters?

Examples of systems:

- Madame Bovary on the Holodeck (2007)
- Deep Space (2009)

Dramatization Methods: Videos

- Involves the translation of the logical events of the narrative into actions performed by real actors.

- Actions are represented by video segments.
  - Pre-recorded videos;
  - Automatically composed videos;

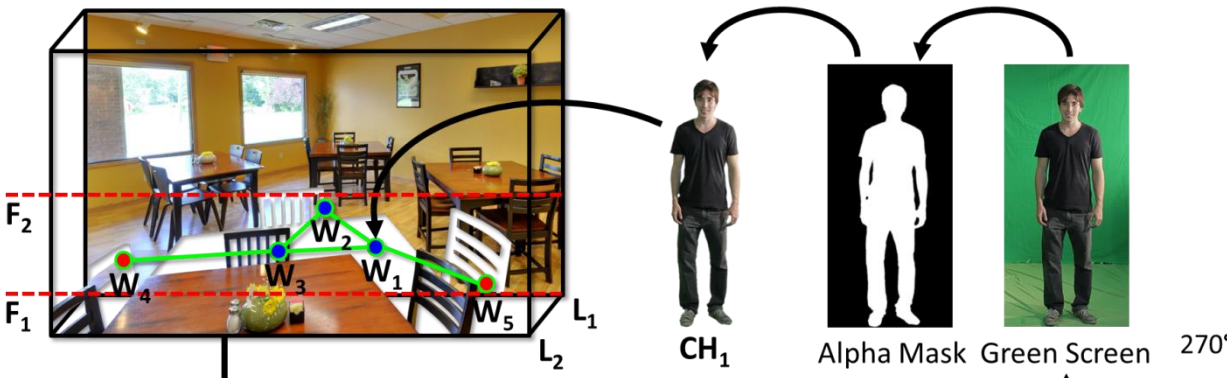
- **Challenges:**
  - How to add interactivity to static video segments?
  - How to reduce the amount of videos to shot?

Examples of systems:

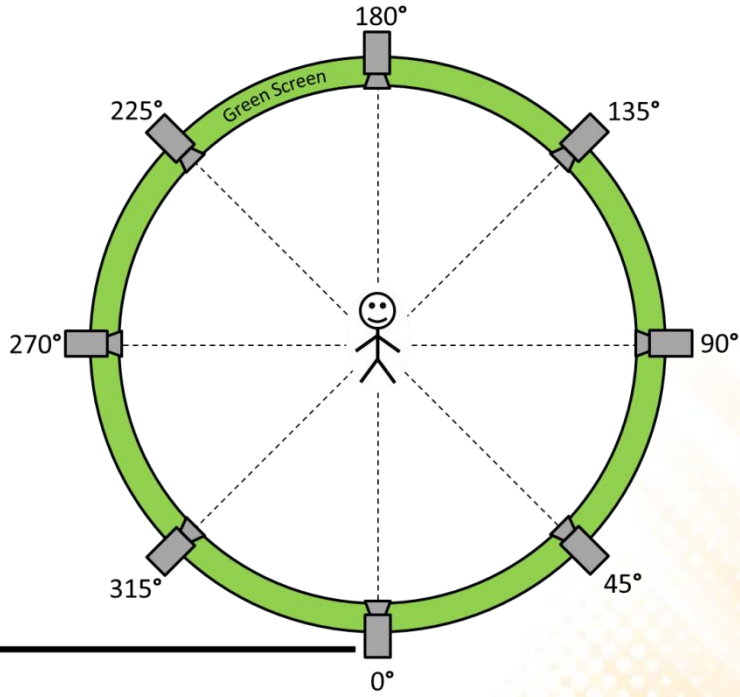
- Accidental Lovers (2006)
- Last Call (2010)
- Deliver me to Hell (2010)
- The Princess Kidnapping (2011)
- Modern Little Red Riding Hood (2014)

Video-Based Interactive Storytelling

- Real-time video compositing:



Frame Output

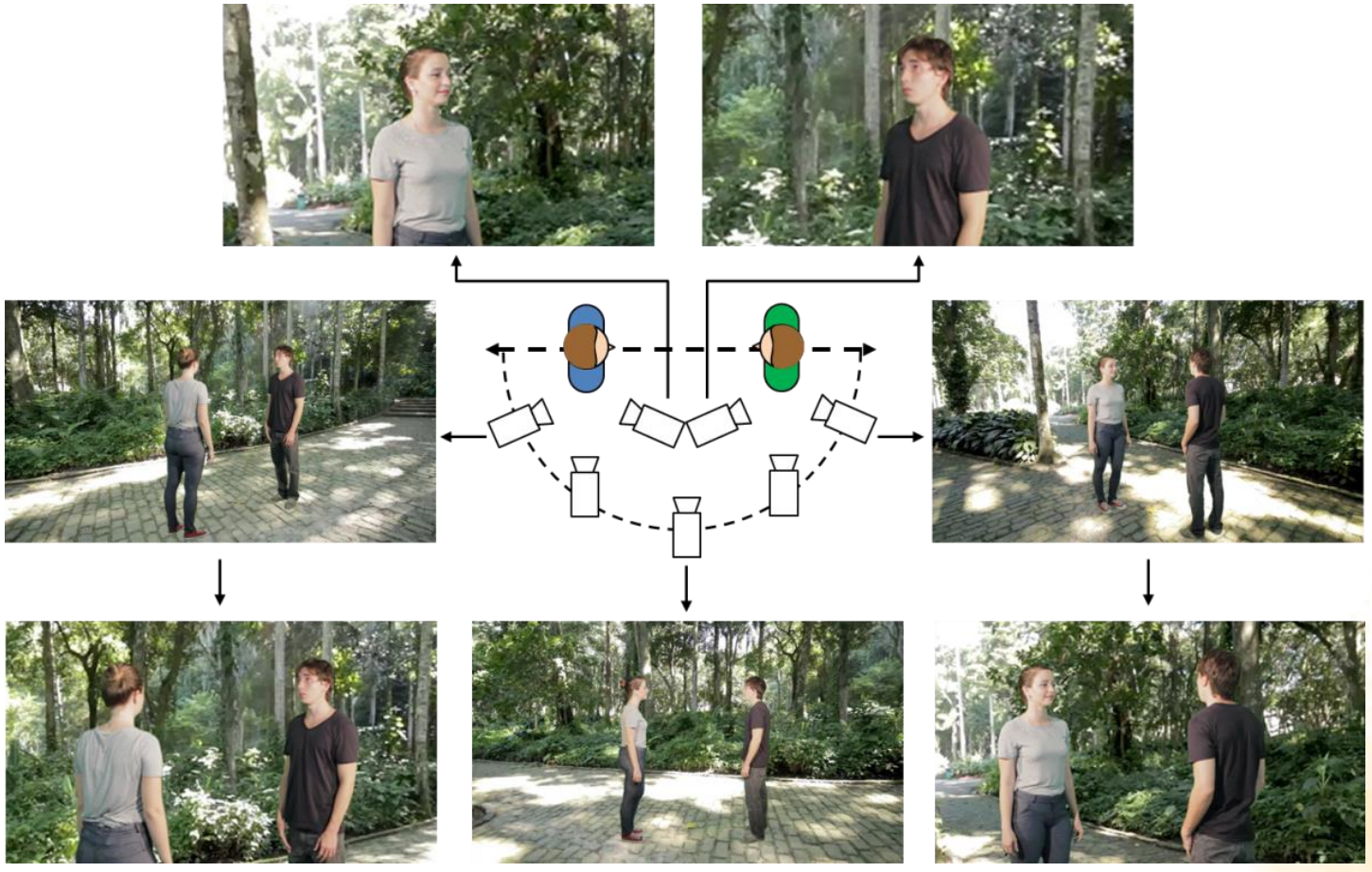


Full Circle Filming Setup

Lima, E.S. **Video-Based Interactive Storytelling**. PhD Thesis. Pontifícia Universidade Católica do Rio de Janeiro (PUC-Rio), Rio de Janeiro, Brazil, August, 2014.

Video-Based Interactive Storytelling

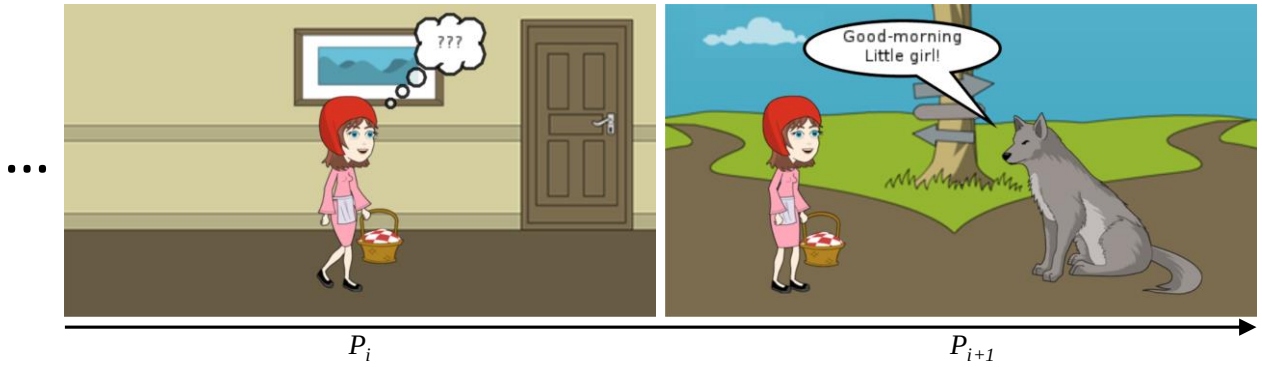
- **Camera Control**:
  - Artificial Neural Networks:



Video-Based Interactive Storytelling

Project Task: Dramatization with Comics

Storyline A – Without user interaction



Storyline B – User interacts and changes the girl's decision

Windows: http://www.inf.puc-rio.br/~elima/is/ComicsViewer.zip

MacOS: http://www.inf.puc-rio.br/~elima/is/ComicsViewer.app.zip

Comics Viewer: Context Overview

- General structure:

```
<ComicsViewer>
  <StoryNetwork>
    <Events>
      ...
    </Events>
    <Edges>
      ...
    </Edges>
  </StoryNetwork>
  <Interactions>
    ...
  </Interactions>
  <Resources>
    ...
  </Resources>
  <Operators>
    ...
  </Operators>
</ComicsViewer>
```

All events of the story.

Connections between the story events.

Definition of the user interaction points.

Images to represent characters, objects and environments.

Definition of how each event is visually represented.

Comics Viewer: Events

- Events:

```
<Events>
  <Event id = "ID" event = "EVENT1(PARAM1, PARAM2, ...), ..."/>
  ...
</Events>
```

- Examples:

```
<Event id = "N1" event = "ini"/>
<Event id = "N2" event = "give(Grandmother, red covering,
  Little girl, Grandmother's house)"/>
<Event id = "N3" event = "ask_to_take(Mother, Little girl,
  basket of food, Grandmother, Mother's house)"/>
<Event id = "N4" event = "tell-right(Mother, Little girl,
  [But remember, don't&talk to strangers and take&care of
  yourself.&], Mother's house)"/>
<Event id = "N5" event = "go(Little girl, Mother's house,
  the crossroad), go(Little girl, Mother's house, the woods),
  go(Little girl, Mother's house, villain's house)"/>
```

Comics Viewer: Edges

- Edges:

```
<Edges>
  <Edge startevent = "ID1" endevent = "ID2"/>
  ...
</Edges>
```

- Examples:

```
<Edge startevent = "N1" endevent = "N2"/>
<Edge startevent = "N2" endevent = "N3"/>
<Edge startevent = "N3" endevent = "N4"/>
<Edge startevent = "N4" endevent = "N5"/>
<Edge startevent = "N5" endevent = "N6"/>
<Edge startevent = "N6" endevent = "N7"/>
<Edge startevent = "N6" endevent = "N22"/>
<Edge startevent = "N6" endevent = "N32"/>
```

Comics Viewer: Resources

- Resources:

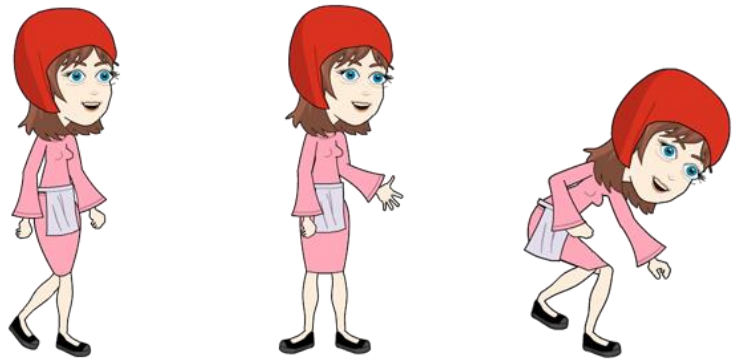
```
<Resources>
  <Resource name = "NAME" file = "FILENAME"/>
  ...
</Resources>
```

- Examples:

```
<Resource name = "Grandmother-Give" file = "images/Grandmother.png"/>
<Resource name = "red covering" file = "images/red covering.png"/>
<Resource name = "Little girl-Recv" file = "images/girl_recv.png"/>
<Resource name = "Mother" file = "images/Mother.png"/>
<Resource name = "Mother's house" file = "images/Mother's_bg.png"/>
<Resource name = "the crossroad" file = "images/crossroad_bg.png"/>
```

Comics Viewer: Resources

- **Image resources:**
  - Images of characters and objects must have transparent backgrounds (i.e. no background);
  - Separated images are required to represent different actions of the same character (with different visual poses);
  - The default resolution of the comics panels is 400 x 210;



Comics Viewer: Operators

- Operators:

```
<Operators>
  <Operator name="EVENT(A, B, C, ...)">
    <Element type = "T" resource = "R" x = "X" y = "Y" scale = "S"/>
    ...
  </Operator>
</Operators>
```

- Example 1:

```
<Operator name="go(A, B, C)">
  <Element type = "image" resource = "#B#" x = "0" y = "0"
           scale = "1"/>
  <Element type = "image" resource = "#A#-Go" x = "100" y = "20"
           scale = "0.5"/>
</Operator>
```

Comics Viewer: Operators

- Example 2:

```
<Operator name="give(A, B, C, D)">
  <Element type = "image" resource = "#D#" x = "0" y = "0"
           scale = "1"/>
  <Element type = "image" resource = "#A#-Give" x = "30" y = "20"
           scale = "0.5"/>
  <Element type = "image" resource = "#B#" x = "30" y = "20"
           scale = "0.5"/>
  <Element type = "image" resource = "#C#-Receive" x = "170" y = "20"
           scale = "0.5"/>
  <Element type = "balloon" resource = "#C#, this&#B# is&for you!&"
           x = "200" y = "30" mx = "140" my = "75" mw = "20"/>
</Operator>
```

Project Assignment 3

3) Create a comics dramatization for the interactive narrative of your project (the same narrative created in the last Project Assignment) using the Comics Viewer system.

   – User interactions are not required for this assignment (this is a task for the next project assignment).