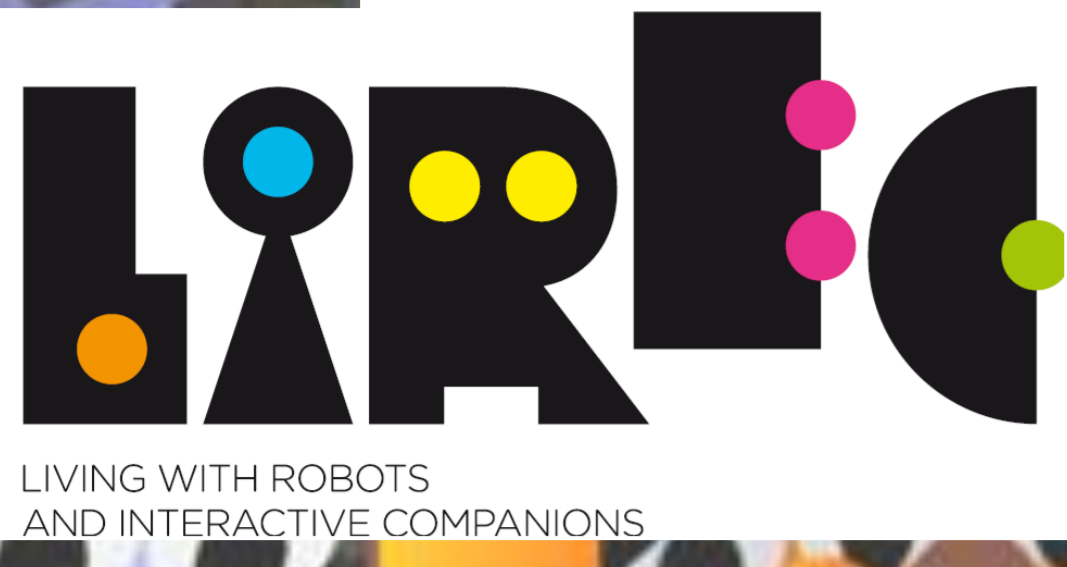
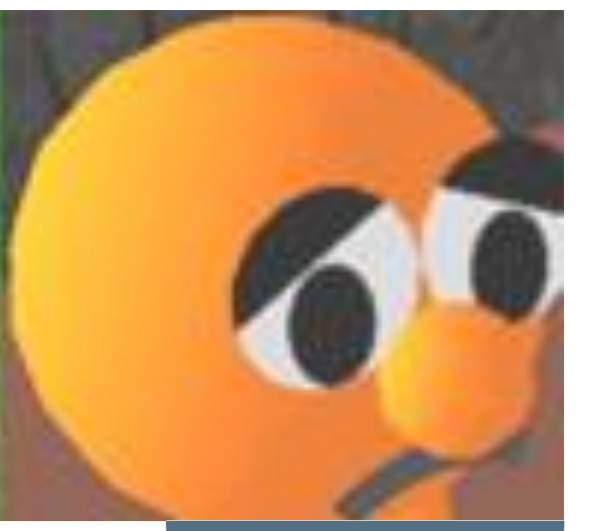




NPC memory affecting emotional reactions and path planning



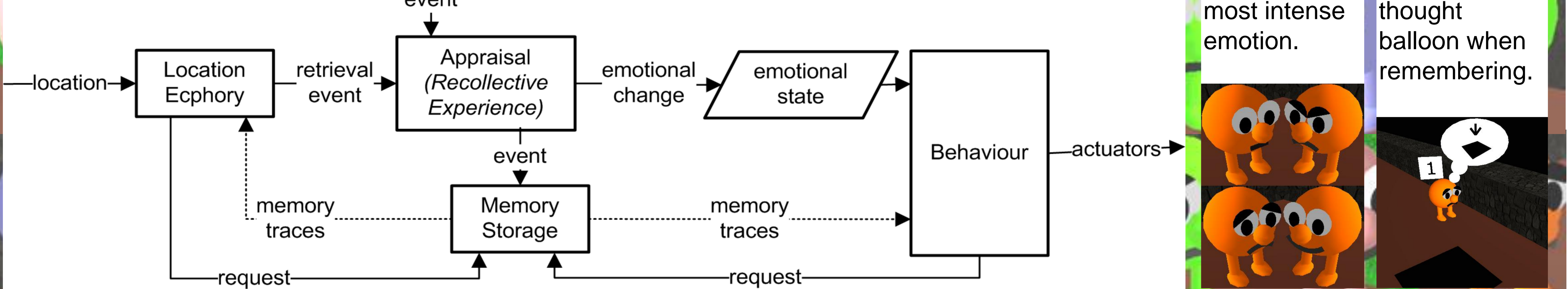
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Problem

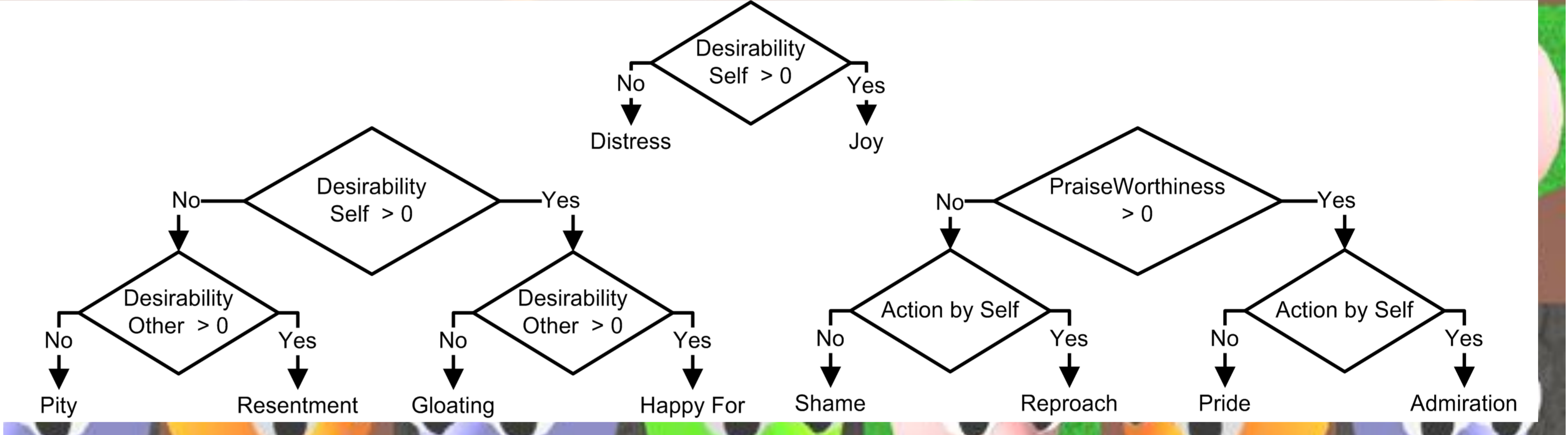
- In games with an **open world level design**, and certain **RPGs**, the player's avatar can **revisit locations** where relevant events have occurred.
- If the avatar has, one or more, **ally characters** by its side, they will in many cases express an **emotional reaction** to the original events.
- However, when returning to the mentioned locations, seldom will these characters express **recollection of the events**.
- To them, it is **just another empty room**, or another type of empty place, while for the player it is not.
- This is inconsistent with the idea that **believable characters should change with experience** [3].

Architecture



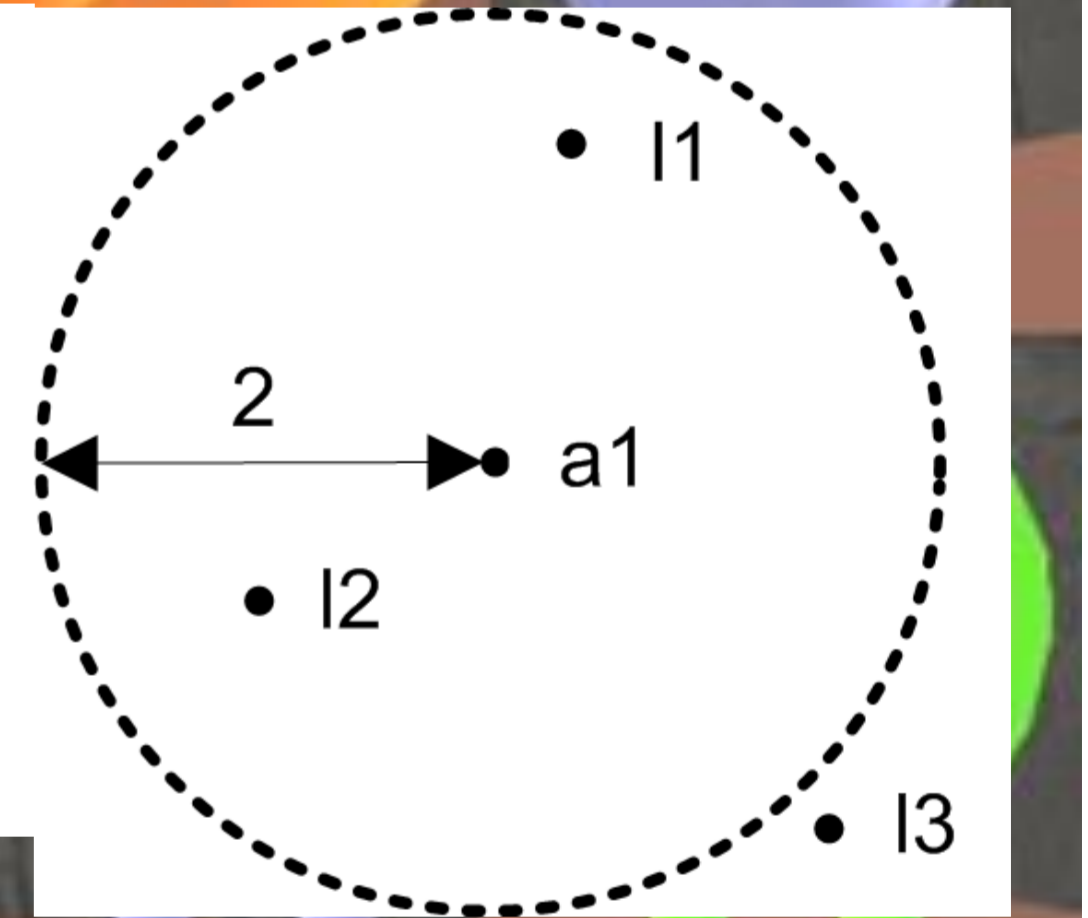
Appraisal (Recollective Experience)

- Adapted from FATiMA's reactive appraisal [1].
- Event types are mapped to appraisal feature values: desirability for self, desirability for other and praiseworthiness.
- Appraisal feature values are mapped to emotion types.
- The emotion's potential must be above emotion thresholds.
- **Past events are reappraised when retrieved.**
- The intensity of emotions caused by past events is less than normal ones.
- Emotional State: active emotions and mood.
- Mood is increased by positive emotions and decreased by negative emotions.
- Low mood decreases characters' skin saturation
- Further details in [2]



Location Ecphory

- memory selection for retrieval
- the character is in a certain radius (authored value) of the past event's coordinates.
- some time (authored value) has elapsed since the event occurred or was remembered.



Path Planning

- Grid A* with memory influenced weights:
- locations in which emotionally negative charged events have occurred – increased cost.
- favors paths where positively charged events have occur – decreased cost (never negative).

5	5	5	5	5	5	5	5	0	0	0	0	0	0
5	5	5	5	5	5	5	5	5	5	5	5	5	5
5	5	5	5	5	5	5	5	5269	5	5	5	5	0
5	5	5	5	5	5	5	5	5209	5	5	5	5	0
5	0	0	0	0	0	5	5	5	5	5	5	0	0
5	0	0	0	0	0	5	5	5	5	5	0	0	0
5	5	5	0	0	5	5	5	5	5	5	0	0	0
5	5	5	5	5	5	5	5	5	5	0	0	0	0

Conclusions

- Designed and developed AI architecture supporting emotional memories connected to locations.
- The architecture enables behaviour change according to experience through emotional expression and path planning.

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- 1 - J. Dias. Fearnot!: Autonomous synthetic characters for emphatic interactions. Master's thesis, Universidade Técnica de Lisboa - Instituto Superior Técnico, 2005.
- 2 - P. Gomes, C. Martinho and A. Paiva. I've Been Here Before! Location and Appraisal in Memory Retrieval, Proc. of 10th Int. Conf. on Autonomous Agents and Multiagent Systems (AAMAS 2011), Tumer, Yolum, Sonenberg and Stone (eds.), 2011.
- 3 - A. Rollings and E. Adams. Andrew Rollings and Ernest Adams on Game Design, chapter Character Development. New Riders Games, 2003.

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