



NANYANG
TECHNOLOGICAL
UNIVERSITY

Design Mood Dynamics for Virtual Human

Reporter: Juzheng Zhang

Supervisor: Jianmin Zheng

Co-Supervisor: Nadia Magnenat-Thalmann

SCE & IMI, Nanyang Technological University
25/08/2012

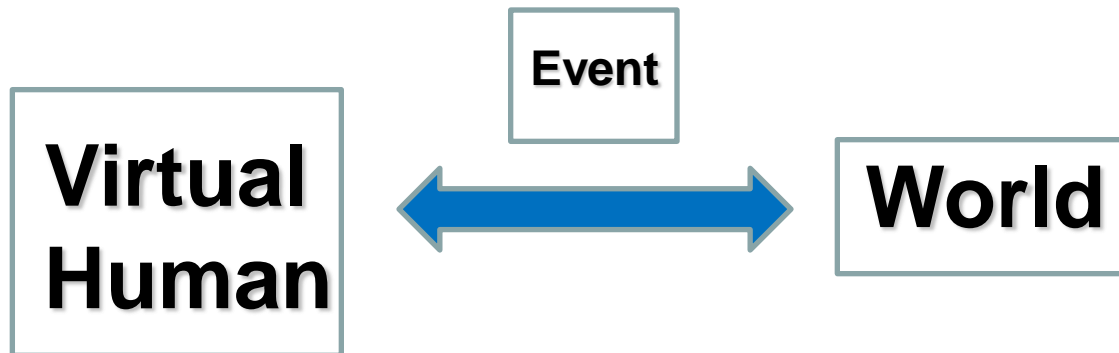
Outline

- Introduction
- Related works
- Proposed mood dynamics model
- Experiments

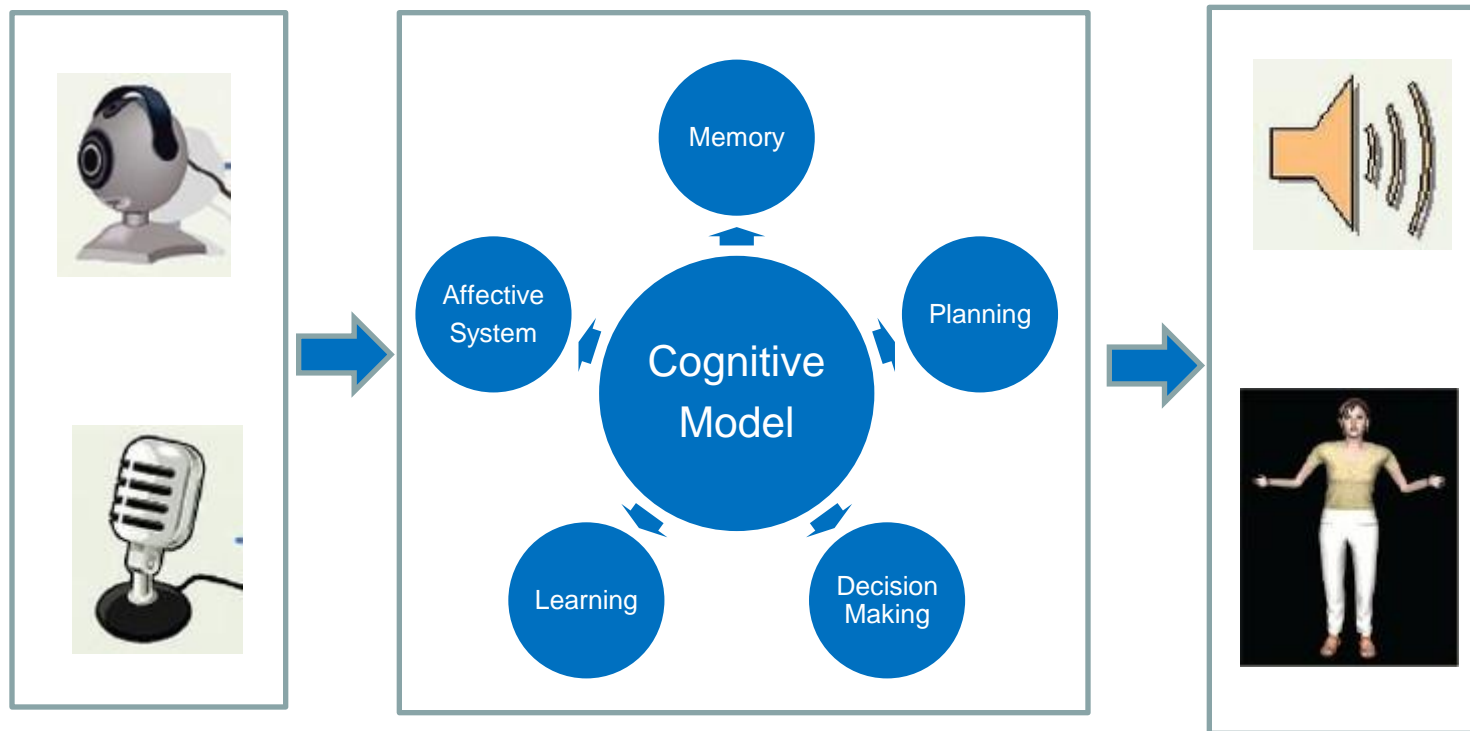
Introduction

Virtual Human

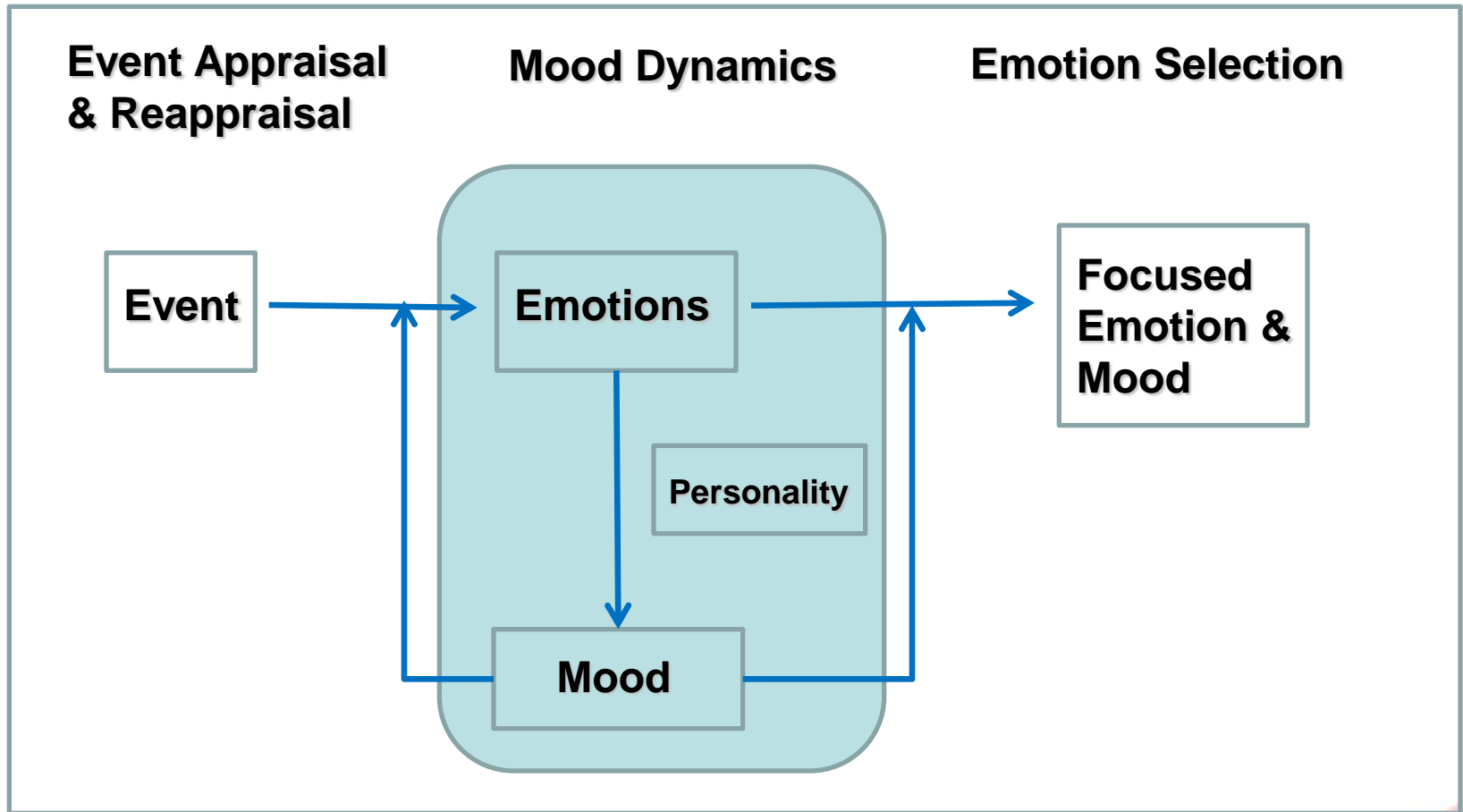
The key point is to deal with the interaction between virtual human and the world



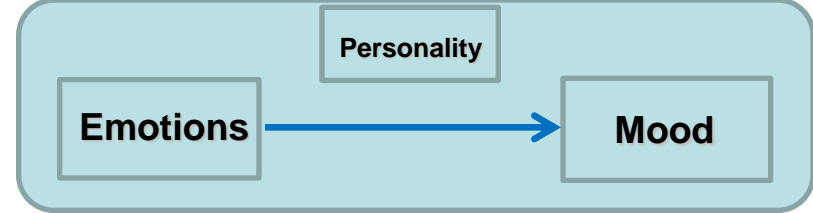
Cognitive Model



Affective System



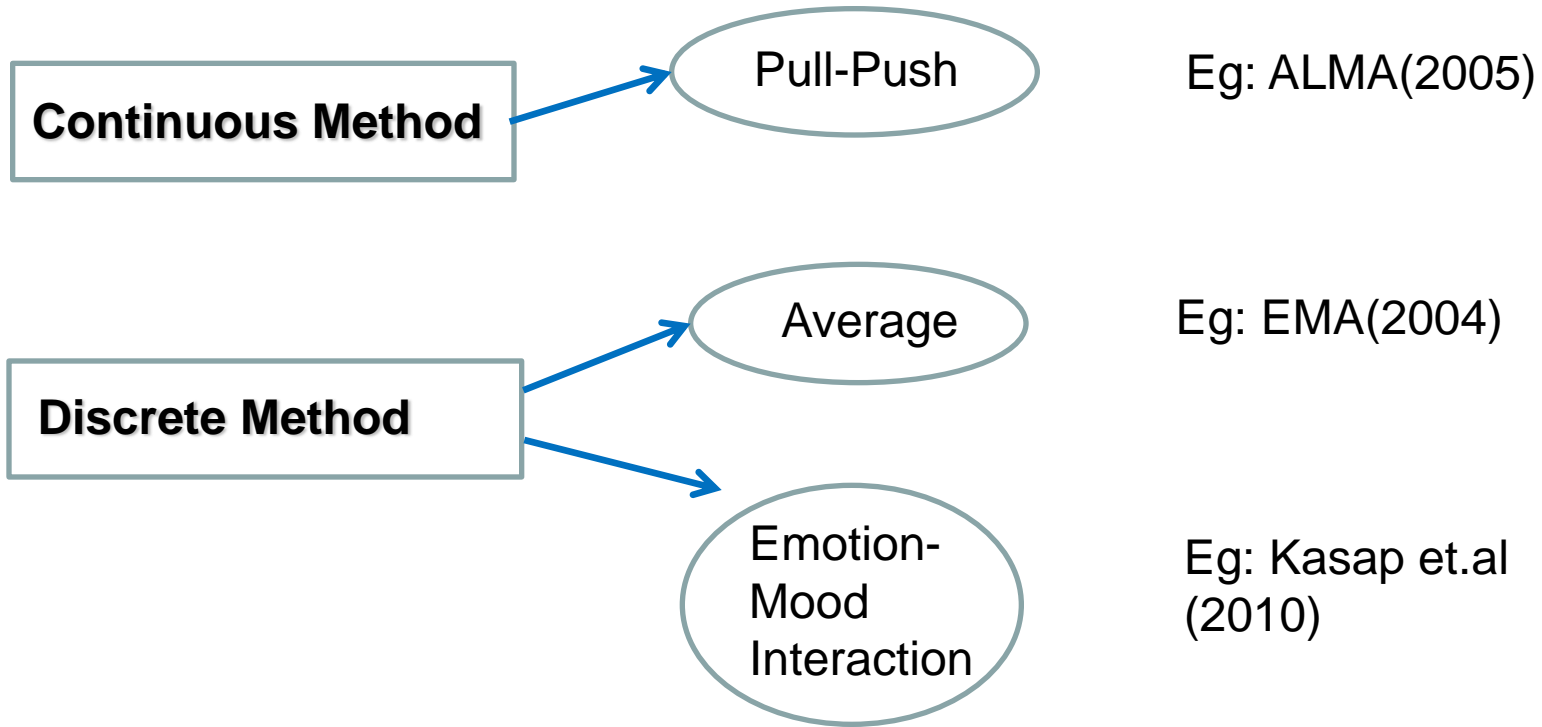
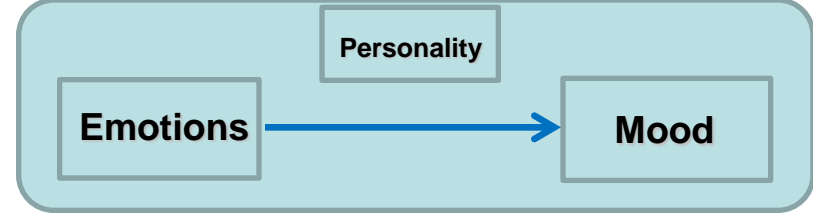
Psychology



- **Emotion:** short-term affect, bound to a specific event, action or object
- **Mood:** medium-term affect, not related with a concrete event, action or object.
- **Personality:** long-term affect, mental characteristics.

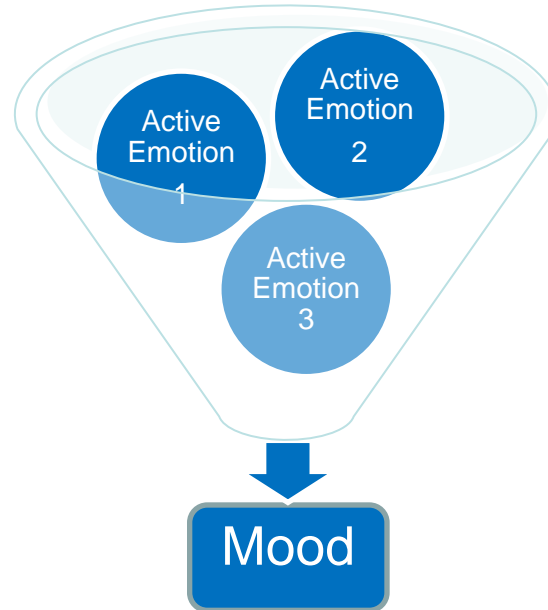
Related works

Methods



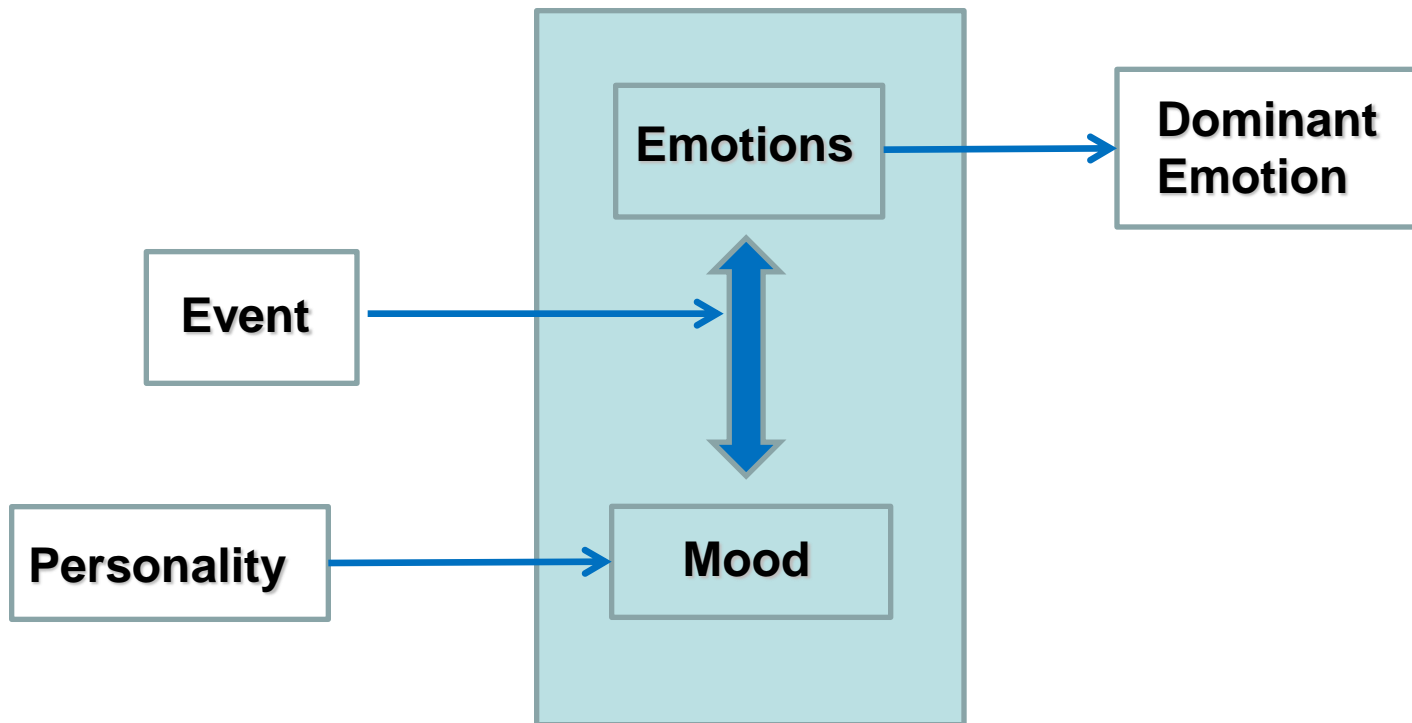
Average Method

- EMA(2004)
 - Mood is calculated by averaging all the active emotions



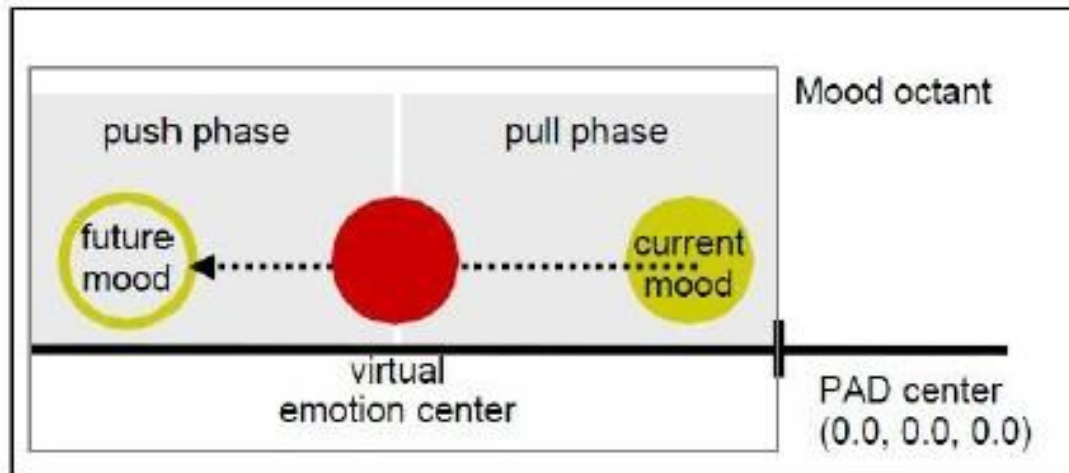
Emotion-Mood Interaction

- Kasap et.al (2010)
 - In each timestep, mood and emotions update each other



Pull-Push Method

- ALMA(2004)



Pros & Cons

	EMA(2004)	Kasap et.al(2010)	ALMA(2004)
Consistency	X	X	√
Efficiency	X	√ X	X
Event-dependent	√	√	√
Time-dependent	√	√	√
Personality-dependent	X	√ X	X

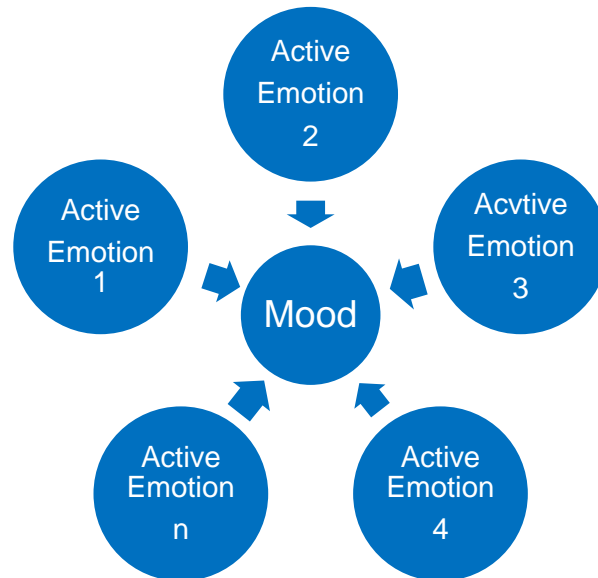
Proposed Affective System

Hypothesis

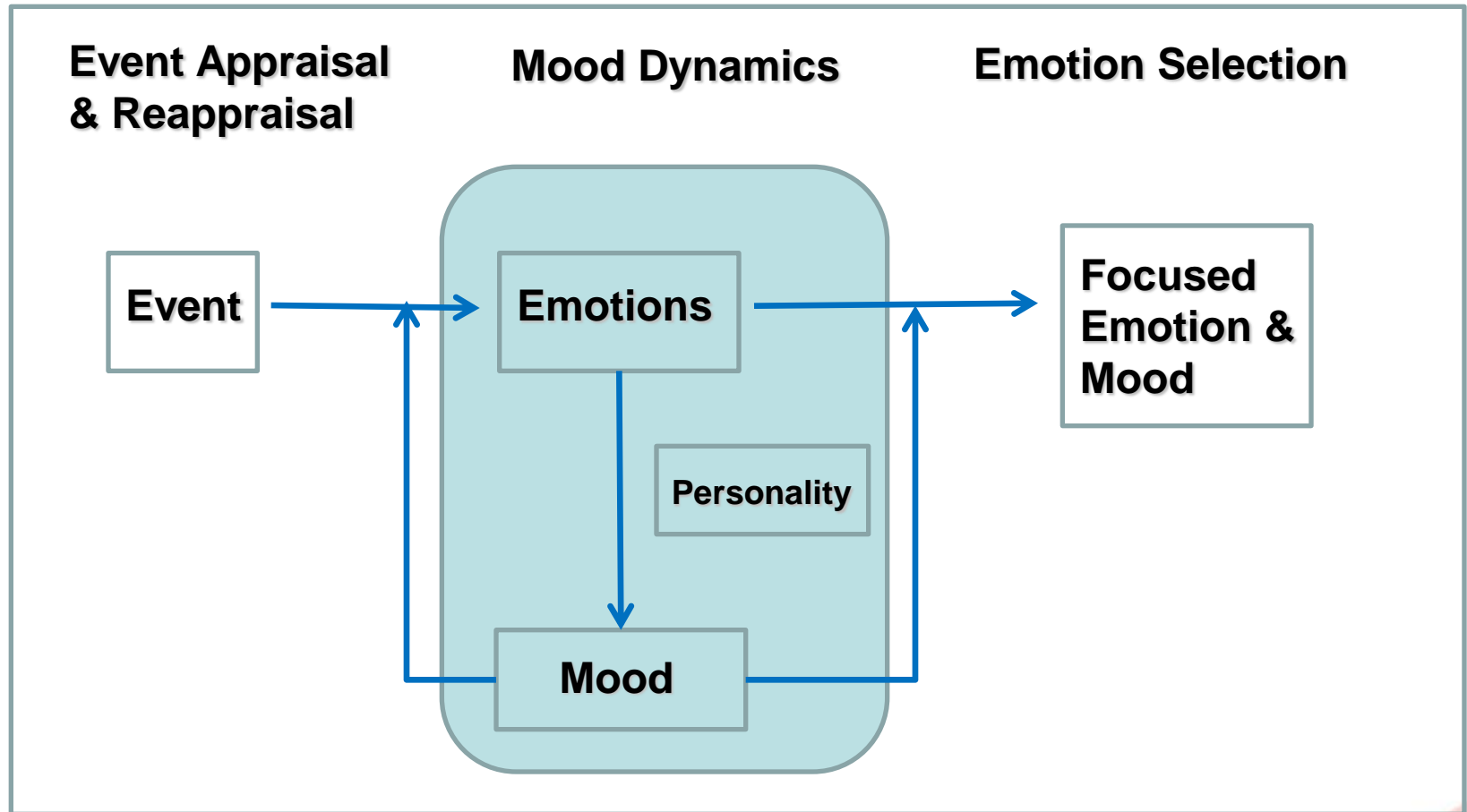
- Continuous change
- Emotions to mood
 - attraction or repulsion force
 - exerts individually
 - The force magnitude is determined by the emotion, the personality and the attraction/repulsive factor
 - The force sign is determined by the relative direction between the emotion and the mood

Hypothesis

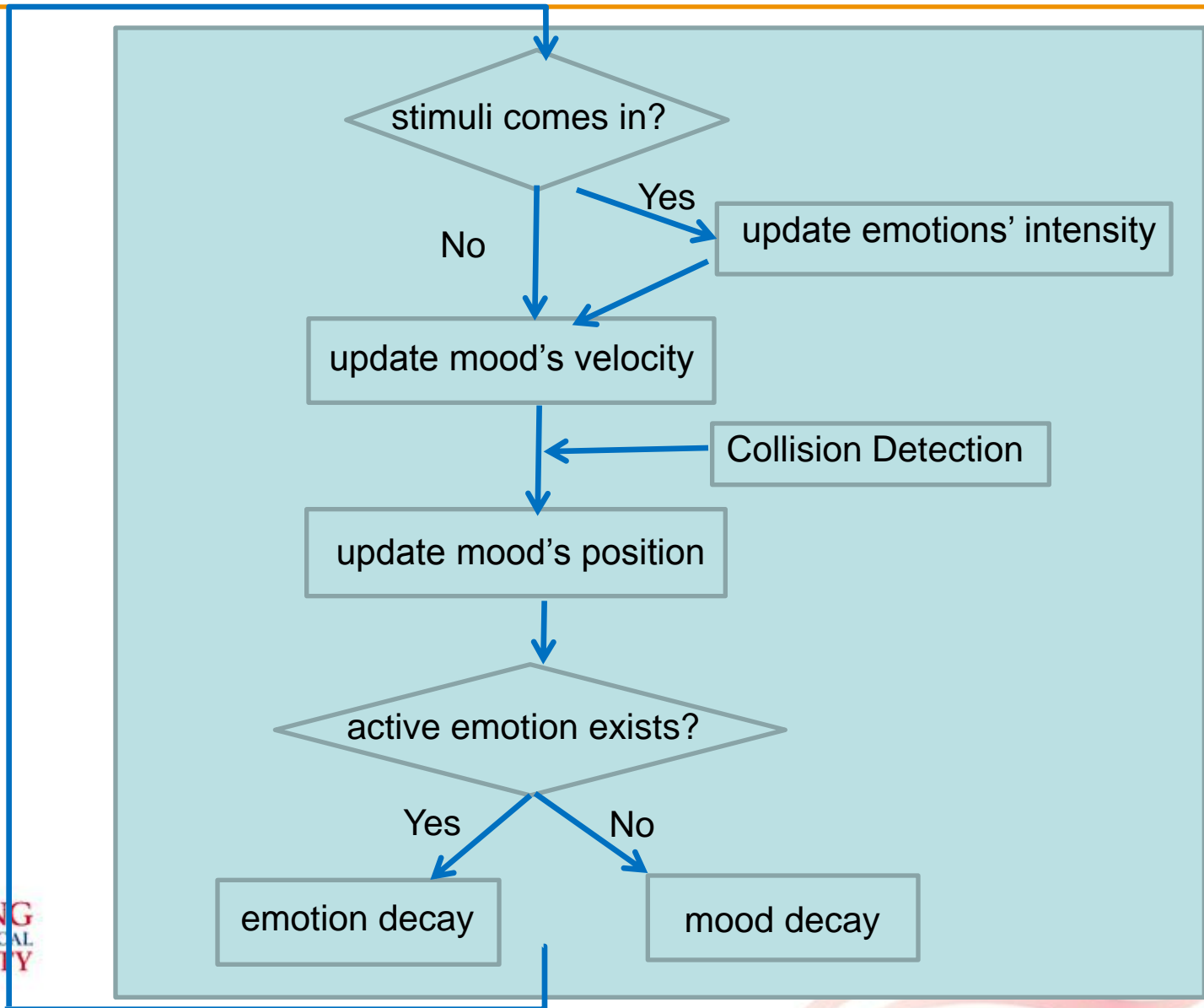
- Mood to emotions
 - event appraisal/reappraisal process
 - Mood determine emotion focus



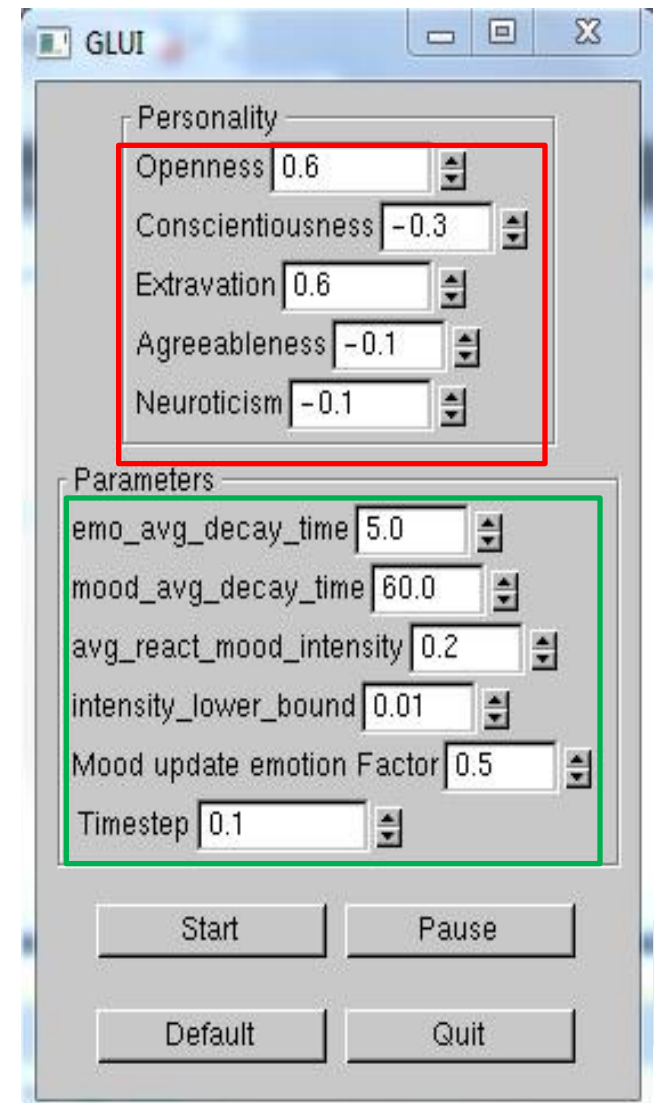
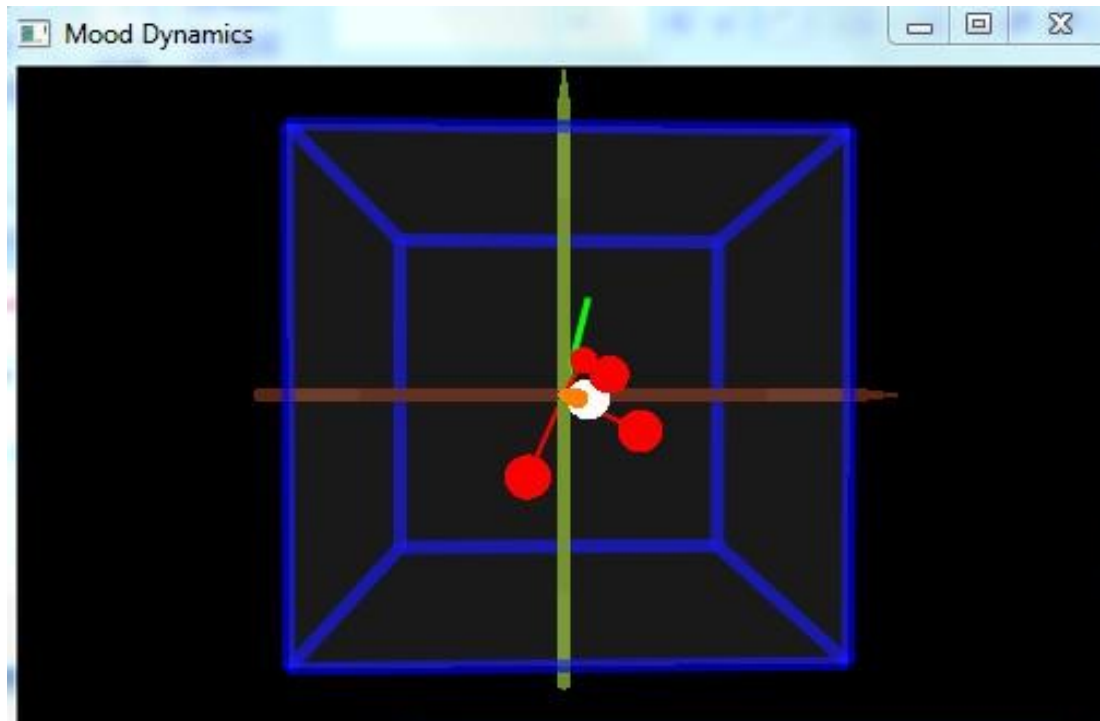
Framework



Mood Dynamics Process



Interface



Comparison

ALMA(2004)	Our Method
Using the average of emotions	Using each emotion individually
The sign of the force from an emotion to mood is determined by the relative position and the octant	The sign of the force from an emotion to mood is determined by the relative direction of the mood and the emotion
Not Integrate the personality	Integrate the personality
Parameters are decided by manually	All the parameters are decided by psychology measurable variables
Mood doesn't influence emotions	Mood influence emotions in event appraisal process.

Comparison

Kasap et.al(2010)	Our Method
Mood changes discretely	Mood Changes smoothly
Emotions influence mood only when new event comes in	Emotions influence mood in every timestep
When new event comes in, the mood influences all kinds of emotions	When new event comes in, the mood only influences those event related emotions
Using personality to determine the starting point of mood	Using personality to determine the influencing strength of individual emotion to mood
Parameters are decided by manually	All the parameters are decided by psychology measurable variables



Experiments

Experiment

- [Demo 1](#)
- [Demo 2](#)

Future Work

- Complete the event appraisal part
- Integrate affective system with episodic memory

Q&A

Thank you !