Emergent Model of Emotions Using Buddhist Philosophy

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Declaration

I declare that this dissertation does not incorporate, without acknowledgment, any material previously submitted for a Degree or a Diploma in any University and to the best of my knowledge and belief, it does not contain any material previously published or written by another person or myself except where due reference is made in the text. I also hereby give consent for my dissertation, if accepted, to be made available for photocopying and for interlibrary loans, and for the title and summary to be made available to outside organization.

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Date

Dedicated to

All those who have dedicated their

Sweat and tears,

Smiles and cheers,

To cherish

The fruits of intelligence!

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Abstract

The term emotion is important to AI as the term intelligence itself. Emotions contribute a great deal to intelligence. Specially in human level AI emotion aspect plays a crucial role. Emotion aspect supports decision making in a sound manner balanced with cognitive aspects, thus making an AI agent believable character different from unconvincing clown. Various attempts have made throughout the history of AI to incorporate emotional support in intelligent systems. Yet still some paths left untraveled. In general previous attempts have identified emotions as static representations. These models are rule based hence the element of uncertainty and evolvability of the system are not given sufficient importance. Although emotions are common to everybody, arousal and responses may be different as driven by a factor of uncertainty. Hence the total outcome is emergent. A strong philosophical basis for these ideas could be found in Buddhist teachings on emotions.

This work presents an attempt based on Buddhist philosophical concepts of emotions where mind state can be considered as an emergent phenomena resulting from interactive elementary entities called emotions. These emotion factors are freely interacting autonomous entities. Their interactions are only constrained with boundary conditions imposed by rules for possible combinations of emotion factors as described in Buddhist theory of emotions. Proposed model is realized via MAS where emergence is supported intrinsically. Hence features are supported with MAS features autonomy, emergence, etc together with emotional capabilities. Inputs and outputs to simulated system are simulated sensory inputs and outputs provided in text mode represented by constrained English. Simulated system comprises of three basic modules containing the prescribed MAS for the core accompanied by personality and the world. Implementation of the system is done as a virtual agent application that is comprised of our emotion model within its cognitive architecture. Evaluation of the system suggests that it is capable to behave emotionally supported with features of emotional intelligence, approximately similar to human behavior in closed environment, and behave smoothly compared to conventional emotion models. Hence we are confirmed on the success of the incorporating emergent emotion model.

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