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## Exploring Computational Models for Intelligent Support of Persons with Depression

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## **Abstract**

In many occasions, feeling depressed is a common human experience, occurring most often as a normal response to external events. However, if this feeling takes hold and will not go away, it may become a unipolar depression. Persons with a depressive illness cannot merely 'pull themselves together' and get better. Normally they may feel sad, anxious, hopeless, worthless, irritable, or restless. These conditions can become chronic and lead to substantial impairments in an individual's ability to take care of his or her everyday responsibilities. In some serious cases, they even may contemplate or attempt to commit suicide. Therefore, it is important to understand the development of depression in order to support depressed persons. As a first step to address the quest to help persons with depression from a computational perspective, this thesis explores a number of computational models that may be embedded in ambient agent models. These computational models are based on related theories to explain various observed aspects and conditions for depressed persons. For example, mathematical definitions and computational implementations are provided for relapse, hopelessness, social support interaction, and mood contagion. These computational models are integrated in ambient agent models, specifically to provide in-depth analysis of the human's functioning (during depression) related to his or her environment and provide support that may more effectively improve his or her wellbeing. From the developed models, a variety of simulation experiments was conducted. Finally, using the simulation traces generated in the experiments, the models were evaluated, in order to verify whether they satisfy a number of essential characteristics and patterns described by particular theories in the literature.