

Senior Design Presentation

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Programming the Social World

Enterasys is striving to improve the ability to analyze the social world and provide effective solutions to workplace problems using the computer power we have today. There are several dynamics that affect how people interact in a workplace. Enterasys wants to find more information than the obvious by using computer programs that use surveys and algorithms. The current program being investigated in this project is based on a lighter and faster-paced build. Hopefully it will be sent to other companies to later test and refine it, depending on needs. In this program, computer models are used to predict social dynamics [Lerman & Hoggs, 2010]. For example, we use stochastic models to predict the popularity of website contents. Our goal is to collect data about social dynamics, analyze the data within a general framework using both statistical and deterministic models/tools and map the resulting analysis back to social dynamics. The hope is that the resulting mapping will allow for more targeted and meaningful inferences about the parameters associated with social dynamics than current methods. The primary aspect of the current project is to review and analyze the current models and formulas the program utilizes. We are hoping to use this analysis of the models to develop a better understanding of the derived results and hence the suitability for applying these models to a class of social dynamic problems of interest. We proceed with the analysis starting with the model and develop a formula that we use to observe the environment and to obtain a variety of related data sets. We also use data pattern mining to create new rules/formulas that hopefully allow to better model the social dynamics of interest. Pattern mining, a new subcategory of data mining, is the process of finding governing rules in large data sets [Clifton, 2013]. Once completed, the computer program developed in this project can be applied to various problems and in many different areas of the world. These applications include everything from organizing how a bunch of companies should/can interact, potentially down to intricate nuances in the interactions between individual workers in a department within a very large company. The use of dedicated software is expected to remove a lot of the human bias that comes with current everyday judgments, because computers do not have prejudices factored into their results. People around the world have tried using simulations of social behavior. One example is the book *Why Society is a Complex Matter* [Ball, P, 2012]. In this book, social science systems are explored to see their growing ability to understand and predict social behavior. In this project, we hope to help Enterasys with creating similar social predictions.

Ball, P. (2012), *Why Society is a Complex Matter*, Springer-Verlag Berlin and Heidelberg GmbH & Co. K, ISBN 13: 9783642289996

Lerman, K. & Hogg, T. (2010), *Using Stochastic Models to Describe and Predict Social Dynamics of Web Users*, Cornell University Library, arXiv:1010.0237v1

Clifton, C. (2013), *Data Mining*, Encyclopedia Britannica,
<http://www.britannica.com/EBchecked/topic/1056150/data-mining>