CAREER: Tools to Support Individual Decision-Making through Community Connectedness

Overview

This proposal aims to build an integrated framework for research and education through developing intelligent tools for individual decision making in online communities for personal goals where large, diverse formats of information in the form of unstructured text, collections of images, and web urls are shared. The initial wave of work in this direction considered a wealth of information but was limited to supporting single labeling decisions (e.g. recommendations). At the same time, there are multiple levels of challenges including the type of data text, image, video, etc., the format of the data (structured, unstructured, semi-structured, etc), the credibility of data, and the role played by these challenges in community connectedness and achieving goals. This proposed work will facilitate a new direction of research on utilizing these multimodal sources of information to support more complex scenarios that require planning and other forms of sequential decision making through investigating the role of data format, user engagement, and social support to foster faster achievement of personal goals. Specifically, this proposal has three overarching goals:
Goal-1: Develop new measures to evaluate the intent of community intent for their members to achieve personal goals
Goal-2: Identify correlates of this intent in engagement including semantics, syntax, visual elements of data
Goal-3: Develop human-machine collaborative measures to enhance goal attainment

Intellectual Merit

The proposed work is highly timely as individuals are resorting to online support to achieve their personal goals. For some of the challenging public health crises such as substance abuse disorders, smoking, and alcohol addictions, online communities are support spaces for these individuals who are going through crises, and helping them to cope. This proposal contributes by identifying plans that help, and also ways for individuals to stay on track to achieve their personal goals in a methodical fashion. We also define novel human-machine solutions that provide new abstractions and characterize the plans that work. This proposed research will shed light on various questions related to sharing practices of narratives and engagement on online communities, and the practical advice, support, feedback from other users to achieve goals. This work will also lay a foundation for core artificial intelligence research in terms of creating mental models of individuals through their narratives, which can be deployed in various real-world applications.

Broader Impacts

The technical solutions involved in this proposal are generalized approaches for building mental models through user discourse. A diverse set of domains could benefit real-world applications such as, mitigating the spread of false news, fighting endemics, limiting hate speech, etc., by using mental models to study user behavior shifts, community dynamics of user engagement. This project will pave a way to provide new training and education experiences for students enrolled in graduate and undergraduate programs here at the Lally School of Management, Rensselaer Polytechnic Institute and beyond. It will especially enrich the classes that I teach primarily for non-CS students who might benefit greatly from the exposure to these kinds of systems proposed in this project. On the

other hand, we hope that this project could potentially help the local and global community by developing human-machine solutions for addiction recovery.