Research Interests and Aims

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ABSTRACT

Motivation: Delineate current research interests for the Emerging Trends in Semantic Technologies class. Additionally, use of this template and continued practice of writing will further prepare the author for more formal writing and presentations. In this example, research into the newly combining fields of information technology, computer science and healthcare provides ample opportunities for upcoming researchers.

1 INTRODUCTION

Over the millennia of recorded history in medicine, constant evolutions and progressions have been witnessed. From the discovery of the therapeutic benefits of hypothermia thousands of years ago to its recent advances into prehospital medicine, healthcare has changed and been impacted by the society surrounding it. Additionally, these advances have comes with their detriments. The advances and discoveries in pharmaceuticals over the last half-century now present physicians with an ever-dizzying array of medications a patient may be on, taking some to counteract the effects of another.

Fortunately, today’s physicians and healthcare providers are able to take advantage of one of the greatest advances in human knowledge representation, discovery and transmission: the computer, combined with the internet and the world wide web. By utilizing existing sources, healthcare providers can not only reference current guidelines and treatment recommendations, but continue to keep up with the latest discoveries in the lab and further their educations throughout their lives and careers.

However, given the potential for computers in healthcare, many regulatory and legal aspects - as well as a lack of training, funding and time for many practitioners - prevent the full-scale use of these systems. Despite these hurdles, many opportunities exist to improve healthcare through the development of cohesive electronic medical records accessible by patients, and advice or decision engines able to present healthcare providers with the optimal treatment or exam for a particular patient. Adoption of these technologies is likely to spread rapidly once the underlying technologies have been developed, maintained, and have demonstrated reliability and an increase in the quality of patient care.

2 INFORMATION TECHNOLOGY IN HEALTHCARE

Now, at the beginning of the second date of the new millennium is a prime time for the research into these life-saving technologies. The President’s Council of Advisors in Science and Technology recently released a report on this very topic, delineating dozens of examples that the country should pursue and aim to accomplish in the coming years.

Many brilliant minds in both healthcare, computer science and information technology came together to brainstorm a variety of possible research aims.

The potential for improving healthcare through the use of computers is essentially limitless given the current state of the art. Simple solutions such as a comprehensive, complete and standardized medical record will provide patients and physicians better understanding of a particular patient’s history. Furthermore, standardized of medical records will also provide a tremendously increased opportunity for public health researchers and epidemiologists to analyze enormous subsets of data without the difficulty of tracking down every single patient through a laborious process. Instead, patient’s might be able to automatically consent to the release of their de-privatized information, allowing the delineation of epidemics, drug interactions or unknown side effects, and surgery results to be more readily apparent.

A comprehensive and thorough knowledge base can present not only physicians with the appropriate information, but would also serve as an ample resource for medical students and researchers interested in a particular topic. Classification of the variety of symptoms and correlating diagnoses into a standardized methodology could allow the creation of knowledge engines capable of earning practitioner’s trust with accurate provenance information. Additionally, future generations of supercomputers and processing engines such as IBM’s Watson would provide the ideal miner for these knowledge warehouses in conjunction with a physician’s own skillsets.

CONCLUSION

The developing fields combining information technology, computer science, informatics and healthcare are becoming ever more prevalent. Dozens of opportunities exist for research in numerous topics within these fields; further discussion to help delineate specific research aims will provide me with a more appropriate and specific direction in the months to come. Additionally, further experience with the research process will allow me to narrow my focus into a particular research question.