

Project Proposal for CS 532: Theory and Applications of Pattern Recognition

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Abstract

This paper briefly introduce the project the users plan to work on.

1 Tentative Title

Can a machine get to the head of your class? : Paving the way for a hands-off expert system.

2 Brief Overview of Topic and Motivation

In any domain of knowledge there exists a problem where people inquire answers to questions of that domain, while the human expert resource is scarce relatively. In the domain of Medical Care, for example, due to the ratio of patients and qualified physicians, patients may need to pay a lot and wait for long to receive proper medical care. Expert systems have built by companies and organizations to answer questions automatically. However, developing expert systems require knowledge of the specific domains, and software usually only work well on those domains, which makes the development process expensive and sometimes wasteful. We are looking for a general solution to answering questions in natural languages from arbitrary domain, which can learn the specific decision making process of a domain given a set of training data. Given training data with knowledge of a specific domain, we want the system to learn the knowledge and become the "expert system" of that domain. Back to the case of medical care, given a large medical knowledge base, the system should be able to answer questions from the patients regarding their symptoms.

3 Core Concepts

3.1 Concepts

1. Singular Value Decomposition
2. Natural Language Processing

3. Bayesian Network
4. Deep Learning
5. Support Vector Machine

3.2 Tools

numpy, scipy

4 Related Papers, Datasets, or Resources

1. Dataset on Kaggle: <https://www.kaggle.com/c/the-allen-ai-science-challenge>