CZ3005 Artificial Intelligence

Report on Lab 2

Patient with a Sympathetic Doctor

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1. Introduction

In this lab, we are required to implement a Prolog based AI to interact with users and to give results dynamically. To improve my understanding of Prolog, I chose the fourth assignment, the sympathetic doctor. Here, the system needs to pretend itself as a doctor, trying to diagnose what illness the patient may have who can only say yes or no.

Users will play as patients in this game and answer yes or no to each question asked by the doctor. After finishing all possible symptoms, the AI doctor will make a diagnosis based on the positive symptoms described by the patient and the knowledge stored in his database to determine what illnesses the patient may have.

In this program, I have set 5 different levels of pain (unbearable pain, lot of pain, manageable pain, mild pain, no pain), 5 different kinds of mood (calm, angry, weepy, anxious, malaise), 9 different symptoms (temperature, sweat, ache, sneeze, cough, blood, breathe rapidly, headache, bruise), and 6 possible diagnoses including no illness, fever, cold, injury, cancer, and anxiety disorder, with each diagnosis characterized by 5 or more symptoms.

When diagnosing, the doctor will first ask users about their pain level and mood, and then ask whether they have each of the 9 symptoms mentioned above to get the eventual diagnosis. During the whole process, the doctor will adjust his gestures and tones accordingly to choices made by patients.

This submission also includes a GUI version of the sympathetic doctor, which is supported by a HTTP web server constructed using Prolog and its build-in libraries only.

1. User’s Guidance

Before running this program, please make sure that your computer has installed the latest version of SWI-Prolog.

First, you need to switch to the main directory which has CommandLine.pl and Server.pl.

Then, to start the command line version, please run swipl CommandLine.pl in your terminal, and then enter ?- halt. to start. For the web GUI version, please run swipl Server.pl in your terminal, and then access <http://127.0.0.1:8000/> from your browsers to start.

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Figure 1: Example of Starting via Command Line

If you would like to try again after the doctor gives his diagnosis, you may stop the swipl environment by enter ?- halt. and then start the AI doctor again to test another group of symptoms.

1. Implementations

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