

L9-CS8650-Expert CLIPS Expert System

CS 8890 8650
Introduction to Robotics & AI
Dr. Ken Hoganson

Class

Will

Start

Momentarily...

- CLIPS is packaged as a ZIP file.
- Download it and save it in a directory called CLIPS.
- Unzip the file. It will create a number of files:
 - CLIPS.exe – the clips executable
 - There is a readme text file
 - There is a CLIPS help file – a reference document
 - There are example CLIPS expert systems
 - There is the source code in C, so you can include it in a project

CLIPS.EXE
README

CLIPS.HLP
README.TXT

CLIPS.C **CLIPS.H**
NPSR.C **PARSER.C**
SYSDEP.C **SYSFUN.C**
TEXTPRO.C

CONSTDEF.H
RULECOMP.C
ALLAML.CLP
USRINT.C

MATH.C
STRUCTDE.H
ANALYSIS.C

DELPHI.CLP
DILEMMA.CLP

MAB.CLP
POISON.CLP

PILOT.CLP

EDBASIC.C **EDMAIN.C** **EDMISC.C**
EDTERM.C **ED.H**

EDSTRUCT.C

RECOVERY.BAT

- Build an expert system to: what?
- You could use an expert system for an interactive set of instructions – for instance, to change a tire, or to cook a can of soup.
- But the power of an expert system is in capturing expert knowledge where decisions and judgments must be made– more than just implementing a set of instructions.
- Early use of expert systems is in program diagnosis. Medical and non-medical.
- Or in examining a checklist of items, where there may be multiple ways to satisfy an item. For instance, a graduation checklist.

- Requirements
- 36 graduate hours
- No more than six hours at grade of 'C'
- Satisfy each required course
- Satisfy applied studies hours (multiple ways)

- Input?
- Could ask the user for each item.
- Perhaps save a file, so user can return without having to enter everything over again.

```
;MSACS graduation program checklist program
; July 11, 2004
;gradchk0.clp
(deffacts initial-facts "These are defaults needed prior to execution"
  (minimum-hours-to-graduate 36)
  (phase atstart) )

(defrule example-rule "This is the core set of graduation requirements" (student-
  hours ?stuhours)
  (minimum-hours-to-graduate ?min-hours)
  (test (>= ?stuhours ?min-hours))
=>
  (assert (OK to graduate))
  (fprintout t "OK to graduate" crlf) )

(defrule askfordata
  (phase atstart)
=>
  (fprintout t "Enter the number of hours that " crlf)
  (fprintout t "will be completed by the semester of graduation:")
  (assert (student-hours = (read)))) )
```

```
;MSACS graduation program checklist program
; July 11, 2004
;gradchk1.clp
(deffacts initial-facts "These are defaults needed prior to execution"
  (minimum-hours-to-graduate 36)
  (maximum-C-hours 8)
  (phase atstart)
)

(defrule example-rule
  "This is the core set of graduation requirements"
  (student-hours ?stuhours)
  (student-C-hours ?stuChours)
  (minimum-hours-to-graduate ?min-hours)
  (maximum-C-hours ?maxChours)
  (test (>= ?stuhours ?min-hours))
  (test (<= ?stuChours ?maxChours))
=>
  (assert (OK to graduate))
  (fprintout t crlf crlf " >> OK to graduate!" crlf crlf)
)
```

```
(defrule askfordata
  (phase atstart)
  =>
  (fprintout t "Enter the number of hours that " crlf)
  (fprintout t "will be completed by the semester of graduation:")
  (assert (student-hours = (read)))
  (fprintout t "Enter the number of hours completed " crlf)
  (fprintout t "with a grade of C or worse:")
  (assert (student-C-hours = (read)))
)
```


- Build an expert system to capture your knowledge about something that you are an “expert” in.
- Minimum of 10 rules.
- Add comments to document

- Turn in:
 - email your .clp file by Tuesday March 31.

**End
Of
Today's
Lecture.**

