

CS HONORS PROJECT

CHECKPOINT 1

PROGRESS

- GOAL ESTABLISHMENT
 - SELECTED TWO TEXTS TO ATTEMPT UNDERSTANDING ON (ONE EASY, ONE DIFFICULT). IDENTIFIED THE ELEMENTS OF THE STORIES AND WHAT SPECIFIC TASKS THE KR SCHEME WILL NEED TO HANDLE.
 - SET GOALS BASED ON THE READINGS.
- CONDUCTED RESEARCH, PRIMARILY IN THESE AREAS:
 - KNOWLEDGE REPRESENTATION (KR) / KR SCHEMES
 - ONTOLOGICAL ENGINEERING
 - LOGIC, INFERENCE, AND LOGIC PROGRAMMING
 - INTELLIGENCE (AND A BIT OF NEUROSCIENCE)
 - NATURAL LANGUAGE PROCESSING

RESEARCH CONCLUSIONS

- FOCUS OF RESEARCH CONDUCTED TO EVALUATING CURRENT KR SCHEMES. I FOUND THE CURRENT SCHEMES TO BE DEEPLY UNSATISFYING FOR THE FOLLOWING REASONS:
 - DIFFICULT TO REPRESENT TEMPORAL ELEMENTS
 - LOGICAL INFERENCE IS AN INCOMPLETE MODEL
 - AND...

RESEARCH CONCLUSIONS

- CURRENT KR SCHEMES GENERALLY *FORCE* ONTOLOGICAL COMMITMENTS BY THEIR NATURE. THIS SEEMED REASONABLE AT FIRST (REF. PROPOSAL SLIDES), BUT THE MORE I RESEARCH, THE MORE I AM DETERMINED THAT A PROPERTY OF A MACHINE WITH TRUE UNDERSTANDING NECESSARILY MUST TRANSCEND THIS. OF COURSE THERE WILL STILL BE ONTOLOGICAL COMMITMENTS, BUT I PROPOSE A MORE FLEXIBLE SOLUTION.

PROGRESS CONTINUED...

- CURRENTLY WORKING ON A SCHEME THAT ALLOWS FOR MORE FLEXIBLE KNOWLEDGE REPRESENTATION AND INFERENCES.
- THE SCHEME IS BASED ON PATTERNS, AND ATTEMPTS TO TURN THE TRADITIONAL PROBLEM OF SEARCH UPSIDE-DOWN. A MAJOR FACTOR IN THIS WAS THE APPARENT IMPOSSIBILITY OF TRUE IMAGINATION IN TRADITIONAL INFERENCE BASED SYSTEMS.
- I BELIEVE I'VE WORKED OUT THE BASIC PRINCIPLES OF THE SCHEME, BUT CURRENTLY THERE ARE MANY MORE QUESTIONS THAN ANSWERS AND I HAVE NOT BEEN ABLE TO FIGURE OUT HOW TO DRAW INFERENCES (OR MORE APPROPRIATELY, WHAT INFERENCES MEAN IN THIS NEW SCHEME).

GOAL ASSESSMENT

- ❑ ORIGINAL GOALS FOR JANUARY WERE TO HAVE A KR SCHEME FORMALIZED AND TESTED. I HAVE NOT YET MET THE GOALS AS THE KR SCHEME IS NOT FINISHED. THIS IS DUE TO THE FUNDAMENTALLY DIFFERENT APPROACH I AM TAKING TO KR IN THE FIRST PLACE, WHICH HAS CHANGED THE TASK FROM A NEW FRAMEWORK BASED OFF AN OLD FRAMEWORK TO ONE OF INVENTING AN ENTIRELY NEW FRAMEWORK (SIGNIFICANTLY MORE DIFFICULT). NECESSARILY THE FOCUS OF THE PROJECT IS ALSO SHIFTING:
- ❑ IF I AM CORRECT, THEN THE NLP, AND KNOWLEDGE ENCODING PORTIONS WILL LOSE EMPHASIS, WHILE LEARNING WILL INCREASE IN IMPORTANCE. THIS IS DUE TO THE WAY I WANT TO ENCODE INFORMATION. THE LEARNER (MACHINE) WILL BE FORCED TO MAKE THEIR OWN ONTOLOGY.
- ❑ THE NEXT MOST IMPORTANT STEP IS TO WORK OUT THE PROBLEMS WITH MY KR SCHEME, AND CREATE A METHOD FOR LEARNING (NOTE THIS REORDERS MY PREVIOUS PROJECT SUMMARY STEPS). I STILL PLAN TO HAVE THE KR SCHEME FORMALIZED BY THE MID-JANUARY MILESTONE.