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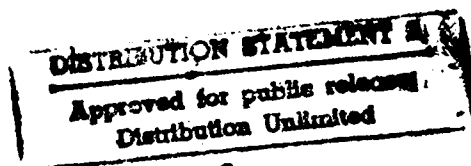
Dear Susan,

This letter is the seventh quarterly progress report for grant N00014-91-J-1532, entitled "On-Line Assessment of Expertise." It covers the period April 1, 1993 to June 30, 1993.

There were two main objectives during this report period. The first was to extend Olae's physics rule base or cognitive domain model to include incorrect rules and correct but unusual rules. The second was to determine whether Olae was able to match fine-grained assessments performed by a person.

Although Olae can model many correct and incorrect solution methods, the students in our first sample occasionally acted in unexpected ways. Before this reporting period, Olae's and Cascade's physics rule base was sufficient to solve many problems in several chapters of introductory physics and contained some common buggy rules. To account for the unexpected methods, we added rules sufficient to produce the behavior exhibited by the students. Of course, because we used this sample to augment the rule base, we will collect another sample to evaluate Olae.

The second objective of this period was to evaluate Olae's performance. We have compared Olae's assessment for two complex physics problems to assessments performed by a human from verbal protocols. These protocols were collected and analyzed before Olae was constructed and were not used in the development of Olae. In all cases where the human assessor determined that the student knew a rule, Olae had assigned a probability of greater than 0.85 to that rule. Similarly, in all cases where the human assessor determined that the student did not know a rule, Olae had assigned a probability of less than 0.15. In other words, Olae is as accurate as the human assessor. In the future, we will extend this analysis to twenty problems and with five subjects.



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Best regards,



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