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Organization: Pace University New York Campus

Review #8

Proposal Number: 0710790
Performing Organization: Pace University
NSF Program: Robust Intelligence
Principal Investigator: Benjamin, David P
Proposal Title: Cognitive Robot Schemas: Integrating Perception, Language and Planning in a Mobile Robot
Rating: Poor

REVIEW:

What is the intellectual merit of the proposed activity?

The proposal describes a cognitive architecture for robotics. The central organizing principle of this architecture is language. The architecture implements the RS language, which is based on port automata, in SOAR, a cognitive architecture developed over many years by multiple universities. The PI proposes a work plan to extend the partially existing RS/SOAR infrastructure to include image schemas, learning, and finally to demonstrate complex problem solving in the context of shepherding tasks.

The proposal is well-written and a pleasure to read. The proposed architecture is interesting. It builds on many years of prior work and clearly embodies a vision for robotic cognition. Unfortunately, the proposal appears to be an implementation plan to build a foundation for research, rather than a research plan in itself.

The proposal does not state a hypothesis that is supported with preliminary data. Instead, the PI states the objective of building a cognitive architecture and proceeds to describe the existing system and the additional components that are to be implemented. It appears from the proposal that the results of this effort would be a specific implementation of a cognitive architecture. If this implementation is not successful, it seems, no scientific insights about robotic cognition would be gained.

The PI clearly has significant experience in the area of cognitive architectures. Hence, it should be easy to state overarching principles that lead to the specific choices in the proposed architecture, discuss trade-offs with alternatives, and to support the proposed choices with preliminary evidence from the PI's prior work. This would make the current proposal significantly more compelling.

What are the broader impacts of the proposed activity?

The proposed activities will establish a collaboration between three universities, bridging the fields of linguistics and robotics. This collaboration includes the development of interdisciplinary courses.

Outreach includes a collaboration with the South Street Seaport Museum.

The ongoing research includes underrepresented minorities (women are mentioned); no additional recruiting activities are proposed.

Summary Statement

In its current form, the proposal represents an implementation plan rather than a scientific investigation.

Underrepresented groups (apparently women) participate in the already ongoing activities. Outreach activities include a collaboration with a museum. Beyond the activities that are already ongoing, no specific broader impact activities are proposed.

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