

Analysis of “A Natural Language Interface to a Robot Assembly System”

Preamble

This is an area of research that I am almost completely ignorant of. I don't know why that is. Perhaps it is because of all the hype that anything with the name “neural nets” garners, perhaps something that is called Natural Language Processing just doesn't roll off the tongue as easily. Overall I can't help but notice the similarities between their stack approach and the way that a simple compiler operates.

A brief statement of the problems addressed in the paper in my own words.

This paper shows and explains a viable method for communicating with Robots such that they can learn and be taught tasks and evolve to higher level instructions. It goes into detail with how the computational stack works and how this system resolves problems when it needs more information or clarification on certain tasks.

What I agree with/like in the paper and why.

There are several things that I really like about this paper. I love how much their system resembles a compiler, which at its heart it is. Their use of the computational stack to one by one pop elements off and compute their meaning is incredible.

I don't know why I keep noticing this, but it is telling every time. In none of the papers do they ever mention anything about using their cool idea with modern computing capabilities. At the very most is a by line that mentions “We ran this on so many GPU's...” or “We ran this on an Apple II”. This paper was written in 1986! It also drives home the point that you make in class. Where achieving a 1% or .5% increase in the current best thing warrants a PHD. These papers never take that approach. They lay groundwork rather than just trying to make something work a little bit better or faster.

One more thing that I have heard often in this class is summarized near the middle of the introduction. ***“The question is, which choice of technologies are appropriate for achieving the desired goals?”*** That seems to be the recurring topic of so much of what we are doing and learning in this class.

What I disagree with/dislike in the paper and why.

Nope, I don't have any disagreements or dislikes.

Any inspirations I found in the paper.

What would happen if instead of a stack implementation we used a tree implementation? Would that allow for easier handling of complex assemblies and subassemblies? Would the robots be able to process even higher order instructions with greater fidelity and less of a need to be trained?

I liked how they provided the user session for the assembly of a motor. It is really instructive to be able to see all the output steps the robot is working through.