Autonomous Research Systems for Carbon Nanotube Synthesis

Presentation notes

- Carbon nanotubes are hard to synthesize
- Robots can help w/ the parameter scan
- Basically ML but IRL!!! Very cool!
- Autonomous REsearch System (ARES)
- ARES OS + Additive Manufacturing ARES
- Wide hats and narrow minds
- Children lose confidence to be scientists but not to do science
- Moore's law for the speed of research
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Discussion

1. Give a definition for autonomous experimentation Experimental process by which a robot or automated system carries out an experiment iteratvely towards some objective. The key dfiference between other approaches is the iteration, making autonoumous experimentation similar to applied machine learning. I think autonomous experimentation is technically possible, and I think if used correctly can speed up research on certain types of problems.

2. Approaches to automated experimentation

   - Many of these use Bayesian optimization... not sure what that is.

3. My graduate research is in the computational space. I already use automation (i.e. automated workflows, package managers, etc.). My research does not consist of traditional experiments, however, I think there are some key areas where we could apply this concept:

- Finding corner and edge cases in software
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