POLS/ECON 409 · *Automation, skills & inequality (2)*

productivity effect	instrumental variable	generative model
reinstatement effect	labor share	large language model
displacement effect	treatment arms	hallucination
composition effect	artificial intelligence	text corpus

1. Last time, we discussed the long-standing question of whether automation creates or destroys net jobs. How do Acemoglu and Restrepo (in the *Journal of Economic Perspectives*) attempt to formalize the effect of innovation on employment? What concepts do they introduce, and how do they use them? Some specific notes to hit: What is the role of ex ante labor scarcity in their model? What is the difference between factor-augmenting innnovation and automation? Why does the effect of automation in one industry depend on the labor intensity of other industries?

2. Did the introduction of robots to manufacturing reduce the overall demand for labor in the US economy, or did this innovation instead unleash sufficient new opportunities for labor to be a net employment boon? Use as much theory and evidence from both Acemoglu and Restrepo articles as you can. For those who read the *Journal of Political Economy* article closely, how well do Acemoglu and Restrepo fend off challenges to their argument?

3. Why do Acemoglu and Restrepo (in the *Journal of Economic Perspectives*) say that "so-so" innovations threaten labor more than brilliant ones? Why do they worry that the US may no longer find new labor-intensive tasks to reinstate workers displaced by automation? Use their ideas to compare 19th century and 21st century innovations, with an eye to potential implications for outcomes (employment, inequality, and growth) and policies to improve those outcomes.

4. What do so-called AI chatbots like ChatGPT actually do? Are they truly artificial intelligence? Rumor has it that Google employees refer to these tools as "spicy autocomplete"; others have called them "stochastic parrots." Are these fair criticisms? Will we remember these technologies the way people look back at the promise of imminent "full self-driving" or efficient fusion power – or will they continue to improve in fundamental ways?

5. What does it mean for chatbots to "hallucinate," and what problems does it pose for various use-cases of the technology? Do you think this problem will be overcome in the near future, or do these tools require a basic re-think or re-design?

6. What are some promising applications of generative AI with either an economic benefit or labor-saving impacts? Feel free to draw on Noy and Zhang, Mollick, Bridle, or your own sources or ideas. What broader inferences can you make regarding the utility of chatbots from Noy and Zhang's experiment (taking into account both their findings and their limitations)? What might Autor say about Noy and Zhang?

7. Do chatbots or other kinds of generative AI have genuine promise to revolutionize work, life, and the economy, or are they overhyped? If the truth is somewhere in between, what do you expect to be the biggest economic effects of this new technology? Be specific regarding tasks, products, and sectors that might be most or least impacted by chatbots, and try to engage with arguments from our readings (Acemoglu and Restrepo, Autor et al, Goldin and Katz, and Galbraith).

8. A theme in this week's reading is the shifting returns to labor and to capital over the last century and a half. But is generative AI even capital, properly understood? Or is it a tool for theft of labor's intellectual property – that is, the copyrighted output of creative individuals? Can generative AI exist without creative labor's input? How might new intellectual property law on the inputs and outputs of AI affect its uptake? Finally, can human labor "fight back" against AI, and if so, how?

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