# How does AI Create Value? The “Task” View

TABLE 1—SUITABILITY FOR MACHINE LEARNING:

| | Occupations | Tasks |
|---|---|---|
| Mean SML | 3.47 | 3.47 |
| SD of SML | 0.11 | 0.31 |
| Minimum SML | 2.78 | 2.38 |
| 25th percentile SML | 3.40 | 3.25 |
| 75th percentile SML | 3.50 | 3.68 |
| Max SML | 3.90 | 4.48 |
| Count | 966 | 19,612 |

SML = “Suitability for Machine Learning”; they use O*NET (964 occupations; 18,156 tasks; 2,069 direct work activities; score each work activities (DWA) for its SML using rubric that considers 23 distinct statements evaluated on a 5-point scale varying from “strongly disagree” to “strongly agree.”

TABLE 2—LOWEST AND HIGHEST 5 SML SCORE OCCUPATIONS

| Low SML occupations | SML | High SML occupations | SML |
|---|---|---|---|
| Massage therapists | 2.78 | Concierges | 3.9 |
| Animal scientists | 3.09 | Mechanical drafters | 3.9 |
| Archeologists | 3.11 | Morticians, undertakers, and funeral directors | 3.89 |
| Public address system and other announcers | 3.13 | Credit authorizers | 3.78 |
| Plasterers and stucco masons | 3.14 | Brokerage clerks | 3.78 |

Source: https://www.cs.cmu.edu/~tom/pubs/AEA2018-WhatCanMachinesLearn.pdf

# LLMs: GPTs are GPTs

*80% of workers belong to an occupation with at least 10% of its tasks exposed to LLMs, while 19% of workers are in an occupation where over half of its tasks are labeled as exposed.*

- **Augmentation vs. Displacement**: LLMs can make many tasks more efficient (*complements*) but may replace others entirely (*substitutes*).

- **Exposure Across Income Levels**: *Higher-wage roles show greater exposure*, indicating LLMs could impact a wide range of job types.

GPTs are GPTs: An Early Look at the Labor Market Impact Potential of LLMs (Eloundou, Manning, Mishkin, and Rock 2023)

# How does AI Create Value? The “System” View

# The task-based view is “irrelevant”

*“I focus on the highly valuable applications of [Artificial Intelligence Technologies] AITs today... My empirical conclusion about these applications is that…* ***task level substitution of machine for human plays no role in these highly valuable systems****.”*

Artificial Intelligence Technologies and Aggregate Growth Prospects
(Bresnahan 2019)

# Real AI Applications Function at the System Level

"I begin with AIT-based product/consumer matching engines at Amazon, Google, Facebook, Netflix... These are not demonstration projects or experiments. They are **production systems** generating revenues in the hundreds of billions of dollars."

# Amazon did not use AI to automate specific tasks previously performed by humans

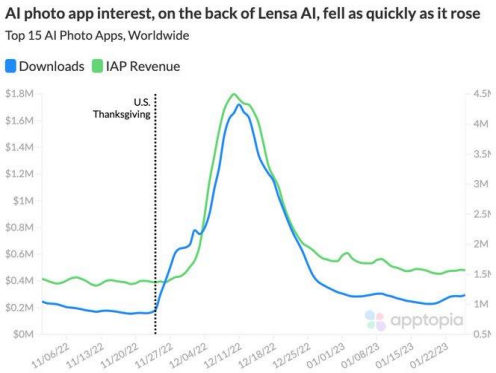
*"Task level substitution plays no role in these applications of AIT. These very valuable early applications are* ***not ones in which labor was undertaking a task and was replaced by capital.*** *Observers focus on task level substitution, not because it occurs, but because the definition of general AI includes 'tasks usually done by humans.'"*

# Taking Stock: Which Is It Then?

## AI can create value on both the task and the system-level

- General AI (e.g. ChatGPT) are designed to imitate humans → better at task-level value creation
  - Wasn't widely available when Tim wrote his critique
  - We don't really know what the long-term value of human imitation will be: substitution vs complementary?
  - "The AI photo app trend has already fizzled" -*TechCrunch Feb 2023* (Lensa etc…)

- System level value creation requires economic and strategic thinking
  - Many existing systems like ranking/matching algos on Google/Tinder have already been very influential
  - Not just because they are accurate (or more accurate than humans), but because they resolved fundamental **economic frictions** and vastly **expanded** economic activities: they do things that humans couldn't or did not do before
  - e.g. auto insurance monitoring (address moral hazard)
  - e.g. ranking based on review and ad auctions (address adverse selection)




- Task-level automation without system-level thinking is dangerous
  - Zillow's algo home buying program failed due to adverse selection (lec 8)