Summary of *"The Main Resource is the Human"*

Policymakers eager to shape the future of artificial intelligence are increasingly focused on controlling or provisioning AI hardware as a lever for influencing the development of AI systems. But while computational power, or compute, is a major constraint for certain types of large-scale research projects, **the degree to which most AI researchers are constrained by access to compute is understudied.** To address this knowledge gap, the Center for Security and Emerging Technology conducted a survey of AI researchers. We find:

1. **For most AI researchers, talent is a bigger constraint than compute.** Most researchers reported that they would spend additional project funds on talent, were most likely to attribute the success of past projects to talent, and frequently reported changing research plans due to a lack of talent.
2. **Differences in compute use between academia and industry are small.** Academics are more likely to report that changes in their need for compute outpace changes in their ability to access compute, but academics are not more concerned than industry researchers that a lack of compute access will constrain their ability to contribute to future AI research.
3. **Heavy compute users are more—not less—likely to want additional compute than low compute users.** However, specific researcher demographics such as academics who use cloud computing or language modelers may have greater compute needs than other demographics.

Recommendations:

Compute interventions may be effective at influencing the development of large AI projects, but are likely less effective at influencing other types of AI research. In particular, compute-focused interventions may leave large fields of AI—such as the field of robotics—relatively unaffected. Most researchers do not work on large-scale "foundation model" research, and do not appear to want to do so.

Policymakers should not view compute-focused interventions as a substitute for talent-focused interventions. Compute-focused interventions have clearer paths to implementation than many workforce-centered interventions. But our survey suggests that most researchers face greater constraints from a lack of access to talent than a lack of access to compute. **In the long term, workforce interventions to train Americans for AI careers are required, but in the short term, policymakers can help maintain AI competitiveness through immigration reform efforts.**

Attempts to "democratize" AI research by provisioning compute must be carefully calibrated. Because heavy compute users are more likely to want additional compute than less heavy users, those researchers may be more likely to make use of large-scale compute resources if provisioned broadly, which would have the effect of further advantaging the researchers, institutions, and methods that already dominate in the current compute-intensive boom of AI research. **Further research is required to understand how to better target policy interventions in order to effectively democratize and diversify the field of AI research.**

For more information:
- Download the report: https://cset.georgetown.edu/publication/the-main-resource-is-the-human
- Contact: Micah Musser | Micah.Musser@georgetown.edu