



POLICY-BRIEF

Understanding the Security Implications of the Machine-Learning Supply Chain

Empirische Untersuchung der Karrierepfade von KI-Doktorand:innen an deutschen Universitäten

Mag. Mary Majometano

October 16, 2024

For Tech Policy in the Public Interest

interface **I**

About interface

Since 2014, our team has worked on building an independent think tank and publishing well-researched analysis for everyone who wants to understand or shape technology policy in Germany. If we have learned something over the last ten years, it is that the challenges posed by technology cannot be tackled by any country alone, especially when it comes to Europe. This is why our experts have not only focused on Germany during the past years, but also started working across Europe to provide expertise and policy ideas on AI, platform regulation, cyber security, government surveillance or semiconductor strategies.

For 2024 and beyond, we have set ourselves ambitious goals. We will further expand our research beyond Germany and develop SNV into a fully-fledged European Think Tank. We will also be tapping into new research areas and offering policy insights to a wider audience in Europe, recruiting new talent as well as building expert communities and networks in the process. Still, one of the most visible steps for this year will be to adopt a name that can be more easily pronounced by our growing community. So, in a few months, Stiftung Neue Verantwortung will become interface. Please also stay tuned for a change in our email address, and a whole new redesign to our website and our publications.

Rest assured, our experts will still continue to engage with Germany's policy debates in a profound manner. Most importantly, we will remain independent, critical and focused on producing cutting-edge policy research and proposals in the public interest. With this new strategy presented today, we just want to build a bigger house for a wider community.

Please reach out to us with questions and ideas at this stage.

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FAQ

Data Sources and Definitions

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We analyzed 28 years of invited papers to the three leading semiconductor conferences as a proxy for research power.

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Of course, research power or innovative capacity is much more than the research

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At the very least, patents and must also be considered. Our analysis of 17,518 papers constitutes a significant piece of the puzzle and offers important insights into the research dynamics in the chip industry. There are three key takeaways.

Headline 3

First, academia took over. Interestingly, industry seems less eager today than 20 years ago to showcase their research at international conferences. The share of papers with industry contributions has declined substantially since the early 2000s.

Only a bold Headline in between

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Allow Headline 4

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2 Images in grid



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First, academia took over. Interestingly, industry seems less eager today than 20

years ago to showcase their research at international conferences. The share of papers with industry contributions has declined substantially since the early 2000s.

We analyzed 28 years of invited papers to the three leading semiconductor conferences as a proxy for research power. Of course, research power or innovative capacity is much more than the research contributed to academic conferences. At the very least, patents and must also be considered. Our analysis of 17,518 papers constitutes a significant piece of the puzzle and offers important insights into the research dynamics in the chip industry. There are three key takeaways.

Slideshow / no grid



Anna Semenov

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Frederic Dutke



Josefine Bahro

Executive Summary

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“Systemic risks of *centralized* development and integration of general purpose AI include economic power concentration, ideological *homogenization*, and disruptions due to rapid adoption.”

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[Semiconductor](#) manufacturing has received considerable attention in recent years. New fab announcements from leading semiconductor suppliers, such as Intel, **Sam-sung** and TSMC, receive a lot of media coverage, and the groundbreaking events of greenfield investments are regularly attended by heads of state. However, what is often underestimated is the constant pressure to innovate to remain competitive. The has one of the highest research and development margins companies spend upward of 16 of their revenue on RD. The chip industry needs innovation across the entire value chain, from wafer fabrication to chemicals, chip design and tools, to produce today's cutting-edge processors that are at the heart of advances in machine learning, such as ChatGPT. Understanding the distribution of research power across industry, academia and technology organizations RTOs can support policy makers in developing strategies to strengthen a region's semiconductor ecosystem in the long term.

Two years ago, we began analyzing this underexposed topic with our first publication on the origin of research power in the semiconductor industry. Based on our takeaways from that paper, we now aim to further explore three questions.

Cybersecurity *policy* [has](#) become a fundamental component of national and international politics. These include institutional set-up, resource situation and allocation, processes and legal frameworks, as well as the impact of national policies on international relations ("spillover effects").

Government's Role in Increasing Software Supply Chain Security (2022-2023)

Head 1	Head 2	Head 3
Laura K.	Bate	Georgetown University

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Although many of these challenges must be addressed primarily at the national level, it is imperative to learn from each other internationally and to work together to develop and disseminate good solutions.

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Mag. Mary Majometano
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