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DeepSeek and AI Innovation: How Chinese Universities Broke Through the Glass Ceiling of Technological Advancement

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ABSTRACT

This essay[1] explores the DeepSeek AI team and their significant contributions to artificial intelligence. Drawing upon the author's expertise in Chinese higher education and global talent recruitment, the analysis challenges the prevailing narrative that technological innovations in China only rely on overseas returnees. By analyzing online bios, the essay reveals that most of the DeepSeek team and their advisors were educated in China, illustrating how Chinese universities have advanced beyond the so-called "Glass Ceiling" in cutting-edge technological research. This breakthrough exemplifies the growing capacity of Chinese institutions to foster homegrown innovation in AI.

Keywords: Artificial Intelligence, Chinese Higher Education, DeepSeek, International Mobility, Global Talent Recruitment, US Higher Education, Geopolitics, Glass Ceiling

INTRODUCTION

The news that DeepSeek released an AI large language model (LLM) that rivaled OpenAI shocked the world. The small Chinese firm reportedly achieved this feat at a fraction of the cost done by the American counterpart, undercutting the business model with a comparable model that is cheaper and open source. While there have been quibbles about how exactly the DeepSeek team achieved this

[1] This essay was adapted from a piece originally published on the College Towns site.

breakthrough, I was interested in the people behind the model, particularly where they were educated. One popular claim in the narrative was that they were all educated in China, without returnees from American universities (Schneider et al., 2024).

It is no secret that Liang Wenfeng, the founder and CEO of DeepSeek, graduated from Zhejiang University, receiving both his bachelor's and master's degrees in Engineering from the elite Chinese institution. Given his background with domestic education and the barriers faced by Chinese tech sector due to various US export restrictions, Liang has targeted domestic talent in the hiring and recruitment process. In building his company he is quoted saying, "The team behind the V2 model doesn't include anyone returning to China from overseas — they are all local. The top 50 experts might not be in China, but perhaps we can train such talents ourselves" (as quoted by Schneider et al., 2024, Part 4, para. 4).

This lack of returnees, or so-called 'Sea Turtles' (hǎiguī, 海龜) is fascinating because the trend for years was Chinese students studying in the US and bringing back home innovations (Kim & Allen, 2018). Harnessing overseas returnees has been a critical part of Chinese development since the reform and opening up of the late 1970s. The tactic has even been criticized as so-called talent poaching and raising national security concerns for programs like the Thousand Talents Plan (Allen & Allen, 2022; Kania & Wood, 2020; Mulvenon & Zhang, 2020).

Because of this reliance on Chinese students trained abroad, along with other domestic restrictions, there has been a conception that Chinese universities could not match the US (or other world leaders) in advanced research. This so-called Glass Ceiling meant that they could achieve a good ranking but could not be among the very elite (Altbach, 2016; Allen, 2017). Even as Chinese universities have made huge gains in various research indicators, there has been doubt about the true impact and innovative capacity of the local higher education sector.

DeepSeek's success seems to push back against these narratives, given the narrative about not relying on overseas returnees for its development. It may signal a new paradigm for global higher education research, in which Chinese institutions prove that the Glass Ceiling label is a myth. I wanted to explore more to understand the higher education component of the rise of this AI company and its implications.

EDUCATIONAL BACKGROUNDS OF THE DEEPSEEK TEAM

DeekSeek did not have an open listing of their employees to investigate. Instead, the scientific papers that underlie the groundbreaking AI models have been released on the public research archive arXiv (Guo et al., 2025; Wu et al., 2024; Chen, 2024). All of the researchers who worked on the paper can be found listed, totaling over 200 names across the various papers. To narrow the focus, I decided to use a sampling frame of only the Core Contributors listed on the papers, along

with those explicitly noted as having left the company. This tactic yielded a small sample of 31 DeepSeek researchers.

For each member of the targeted sample, I searched online for their bios or activity. Most of the researcher team had online footprints through GitHub, LinkedIn, Google Scholar, personal sites, or even Twitter accounts. A considerable number of those sampled had serious published research beyond that of the DeepSeek team, dating back to graduate school. For this essay, I focused on the sample's educational affiliations, meaning which university they graduated from and if they had any listed advisors.

ANALYSIS OF DEEPSEEK'S EDUCATIONAL BACKGROUNDS

Of the 31 DeepSeek team members targeted with this search, I found educational information for 22 of them. For most, the information included both undergraduate and graduate history. In general, the reports about the DeepSeek team having no returnees working on these projects seemed mostly true, albeit with some caveats. Indeed, all of the DeepSeek-R1 Core Contributors who I could find were educated in China from their time as undergrads up to graduate school. The same is true of the contributors who had left the DeepSeek team. Although, one member was a visiting student at Stanford University, which I did not count in the official tally of universities, as shown in Table 1.

Table 1: Universities Where DeepSeek Team Members Earned Degrees

Undergraduate Degrees	*Graduate Degrees*
Beihang University x 3	Beihang University
Beijing Normal University	Hong Kong University of Science and Technology
Beijing University of Posts and Telecomm.	Monash University* (Australia)
Harbin Institute of Technology	Nanjing University
Heilongjiang Institute of Engineering	Peking University x 9
Nanjing University Northwestern Polytechnical University	Shanghai Tech University
Peking University x 4	Sun Yat-sen University
Shanghai Jiao Tong University	Tsinghua University x 4
Sun Yat-sen University	University of Texas at Austin* (USA)
Tianjin University	Wuhan University x 2
University of Science and Technology of China	Zhejiang University
Zhejiang University	

Note: x illustrates multiple tallies of the university. * connotes a non-Chinese university.

In the search, there were some degrees abroad from the team through the DeepSeek-VL2 paper. Both Zizheng Pan and Xingchao Liu had overseas

education. Pan earned a PhD from Monash University in Australia and Liu earned a PhD from the University of Texas at Austin in the US, respectively. Further, Pan does appear to fit the Sea Turtle mold; through his degree at a premier public institutions in the US, he also appeared to have an internship at NVIDIA before returning to China, the top US company for GPUs needed for AI development. Zhiding Yu, senior research scientist at NVIDIA Research, praised Pan for his time at the company. "Zizheng's case is a very typical example of what I have witnessed in recent years. Many of our best talents come from China, and these talents don't have to succeed only in a US company. Instead, we learn a lot from them," Yu (2025) said in an online post.

Finally, for the Janus-Pro paper, which outlines the AI image capability of the DeepSeep platform, had several authors overlapping with the other sets of papers. One of those authors, Zhenda Xie, was educated fully in China but also had a connection to the US-based company Microsoft. Xie had an internship at Microsoft Research Asia, which does seem to have a strong connection to DeepSeek, as discussed further below. However, Microsoft is a multinational corporation which operates globally, including offices throughout China and Asia. An intern with Microsoft Research Asia does not need to step foot in the US. Aside from these couple connections, the narrative around the DeepSeek being domestically trained without Sea Turtles from the US higher education is mostly true.

DEEPSEEK TEAM'S GRADUATE SCHOOL ADVISORS

I found that the overwhelming majority of the DeepSeek team was indeed trained in China, which led me to wonder about their professors at Chinese universities. I hypothesized that they had training in the US or the West, given the narrative about Chinese training in the US. From the bios that I found of the DeepSeek team, a few of them listed who they were advised by or worked with while in grad school. From this search, I found that my hypothesis about the professors' training was mostly wrong. While by no means exhaustive, the professors I found who trained the DeepSeek team were also mostly educated in China.

Peking University dominated the educational list for the DeepSeek team, and the advisors were no different. Dr. Baobao Chang, Dr. Zhifang Sui, and Dr. Yingfei Xiong are all faculty at the School of Computer Science, Peking University. Dr. Chang is an associate professor who obtained a bachelor's from Shanxi University in 1992 and a PhD from Peking University in 1999. Likewise, Professor Sui graduated from Shandong University in 1992 and did her PhD at Peking University, finishing in 1998. Dr. Xiong, Associate Professor, is the only one of the three with an education abroad. He completed his undergrad at the University of Electronic Science and Technology of China, but did his PhD in

Japan at the University of Tokyo, following it up at the University of Waterloo in Canada.

Table 2: Educational Backgrounds for the DeepSeek Team's Graduate School Advisors

Faculty	*Institution*	*Undergraduate*	*Graduate*
Baobao Chang	Peking University	Shanxi University	Peking University.
Zhifang Sui	Peking University	Shandong University	Peking University
Yingfei Xiong	Peking University	University of Electronic Science and Technology of China	University of Tokyo University of Waterloo* (Post-Doc)
Yujiu Yan	Tsinghua University	China University of Mining and Technology	Chinese Academy of Sciences
Minlie Huang	Tsinghua University	Tsinghua University	Tsinghua University
Jinshi Cui	Tsinghua University	Tsinghua University	Tsinghua University
Baining Guo	Tsinghua/ Microsoft Research	Peking University	Cornell University*
Han Hu	Microsoft Research Asia	Tsinghua University	Tsinghua University
Yue Cao	Microsoft Research Asia	Tsinghua University	Tsinghua University
Zheng Zhang	Microsoft Research Asia	Huazhong University of Science and Technology	Huazhong University of Science and Technology
Shenghua Gao	ShanghaiTech University/ University of Hong Kong	University of Science and Technology of China	Nanyang Technological University*
Qiang Liu	University of Texas at Austin	Beihang University	University of California, Irvine*
Hao Su	University of California, San Diego	Beihang University	Beihang University/ Stanford University* (2^{nd} PhD)

* connotes a non-Chinese university.

Tsinghua University, no surprise, also had fingerprints throughout the DeepSeek team. None of the faculty advisors from Tsinghua had educational degrees from abroad—Dr. Yujiu Yan, Dr. Minlie Huang, and Dr. Jinshi Cui. Dr. Yan did his undergrad at the China University of Mining and Technology and later earned a PhD from the Chinese Academy of Sciences in 2008. Both Dr. Huang and Dr. Cui did their bachelor's and doctoral work at Tsinghua. Another connection for Tsinghua came through Baining Guo, who is an adjunct for Computer Science at the university but is professionally a Distinguished Scientist with Microsoft Research. He completed his undergrad at Peking University before his graduate work (MS and PhD) at Cornell University. He was also named as a Royal Society of Canada (RSC) fellow in 2024.

The advisor connection to DeepSeek continued for Microsoft with Dr. Han Hu, Dr. Yue Cao, and Dr. Zheng Zhang. Dr. Hu is a principal researcher and research manager at Microsoft Research Asia (MSRA). He did his undergrad and PhD at Tsinghua, along with a visiting studentship at the University of Pennsylvania, not listed on the official tally on Table 2. Dr. Cao was formerly a senior researcher at Microsoft Research Asia, who also did his degrees at Tsinghua. Dr. Zhang, a researcher at MSRA, completed his degrees from Huazhong University of Science and Technology.

Finally, there were a couple outside China connections from these advisors. For those other Chinese institutions, Shenghua Gao was formally a faculty member at ShanghaiTech University, now an Associate Professor Associate Professor at The University of Hong Kong. He earned his undergraduate degree at the University of Science and Technology of China, but he also did a PhD in Singapore at Nanyang Technological University. There were two advisors I found listed for professors from American universities. Dr. Qiang Liu is an Associate Professor of Computer Science at the University of Texas at Austin. He earned his BS from Beihang University and a PhD from the University of California, Irvine. Similarly, Dr. Hao Su is an Associate Professor at the University of California, San Diego. He also did his undergraduate at Beihang, along with a PhD there, and a second PhD at Stanford University.

CONCLUSION: CHINESE TALENT AND US HIGHER EDUCATION

When looking at the educational background of the DeepSeek team, elite universities dominate the list, just not elite American universities. Only a few of the members had degrees from the US, along with a few others from other locales. Mostly, the Chinese researchers were trained in China at the country's top institutions. Finding Peking and Tsinghua in this would be no different than finding engineers at an American-based start-up filled with graduates from Stanford and Harvard. These elite Chinese institutions drive the company, different from firms

in the past that may have focused on returnees. Patel et al. (2025) described DeepSeek's competitive recruitment and attractive process:

> DeepSeek regularly runs recruitment events at top universities like PKU and Zhejiang, where many of the staff graduated from. Roles are not necessarily pre-defined and hires are given flexibility… They are extremely competitive, and allegedly offer salaries of over $1.3 million dollars USD for promising candidates… They have ~150 employees, but are growing rapidly (para. 10).

The most surprising thing is that even the professors who taught the DeepSeek team members were also mostly fully educated in China. It does seem like, even with questions surrounding the model development, this case does show that Chinese universities have broken through the so-called glass ceiling. They are now producing some of the best talent in the world on the bleeding edge of artificial intelligence without the US. Scholars should consider deeper studies into those in the high-tech sector's educational backgrounds, including more bibliometric and network analyses.

There are now some Americans raising the alarm bells over slipping in the AI race. Melanie Hart of the Atlantic Council argued, "Let's steal their best engineers… we'd be better off if the engineers behind that were working here in the US (as quoted by Han, 2025)." Given that these students are no longer trained in the US and can get competitive salaries back home, recruiting the top talent from China will be more challenging today. Likewise, recruiting Chinese has also become more complicated due to this group being targeted as national security threats. These concerns have already been driving away students and scholars (Allen & Ye, 2021). Tensions have flared at the Chinese government recruitment efforts to return the Sea Turtles through initiatives like the Thousand Talents Plan (Allen & Allen, 2022).

While most of the universities I found related to the DeepSeek team were expected top institutions, there were three of the so-called Seven Sons of National Defense universities present: Beihang University, Harbin Institute of Technology, and Northwestern Polytechnical University. These have concerned Western governments due to the universities' connections to the Chinese military; and in 2020, the US government put restrictions on students from these universities coming to American universities (Kania & Wood, 2020; Mulvenon & Zhang, 2020). Although, these institutions are still considered upper tier in terms of education in China, being part of the former 985 elite grouping that goes beyond military distinctions (Allen, 2017).

Nonetheless, the development of DeepSeek and the technological advancement will bring more attention to the higher education space in terms of intelligence agencies, national security, and corporate espionage. Some of the

connections to Microsoft or other US entities will only create apprehension in the US, dividing scholars, especially those from China or from the broader diaspora. Scholars have been discussing that these pressures have been growing growing in the current environment. From a survey of faculty, scholars, and students in the US, Li and Lee (2022) found excess stress on ethnic Chinese respondents:

> The scientists who reconsidered their future in the United States included Chinese international graduate students seeking to start their careers as well as established professors who had lived in the United States for decades. If US–China geopolitical tensions continue, the US may suffer as a result of Chinese scientists leaving the country (p. 22).

In my own cursory review of the DeepSeek team, in general, all of this information was widely available online. Most of the team members had a fairly robust online footprint, posting about AI or other happenings on social media. I also noticed several had anime or cartoon profile pictures. These actions did not seem related to any kind of covert or clandestine efforts. Instead, the team's online footprint felt more familiar in terms of academics online—they were simply a group of scientists having fun on social media and trying to make breakthroughs in the field. Scholars should continue to monitor how these issues may hinder global mobility, enveloping individual students, professors, or other researchers into a geopolitical battle.

In the end, there will probably be a widening rift between the US and China. In the past, the US could count on the best and brightest still coming to its universities because the country had the top educational opportunities. In order to do groundbreaking work in the most technologically advanced areas, students had to train with American scientists in US universities. DeepSeek shows that this is not necessarily the case anymore. The team is full of very young, incredibly smart, and highly driven Chinese university graduates who do not need the United States. From this early analysis, it seems like the Glass Ceiling label should be retired.

Note: The original essay can be found at https://collegetowns.substack.com/p/where-did-the-deepseek-team-study.

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