China's genius plan to win the AI race is already paying off

A network of ultra-competitive high-school talent streams has been turning out the leading lights of science and tech

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About three years ago, Stacey Tang, a manager in a pharmaceuticals company in Beijing, received a peculiar phone call. A voice speaking from an unknown landline number instructed her to send her 15-year-old son to take a qualification test for the "genius class" at one of the city's elite high schools.

It was November 2022, at the peak of Beijing's Covid-19 lockdowns. Schools were mostly closed and any in-person contact was discouraged. Even so, the test setting sounded bizarre: a moving van that would drive the boy through the streets of the capital for an hour while he tackled college-level maths problems.

Some parents might have baulked at the idea, but not Tang. "In any other country, you would immediately suspect an abduction plot or simple lunacy," she said, grinning at me through the steam from her Starbucks latte. "Instead, I was weeping with joy, and sent my boy right away. I understood this for what it was: his golden ticket to the best educational resources in China."

Tang's son was one of an estimated 100,000 talented Chinese teenagers selected every year to enter a network of science-focused talent streams run across the country's top high schools. The genius classes, also called "experiment" or "competition" classes, coach gifted students to compete in international competitions in maths, physics, chemistry, biology and computer science. Tang was on the genius path herself almost 30 years ago, in her home city of Chengdu in south-western China. It helped her move to Beijing to study at the prestigious Peking University, and secure a well-paid job.

For decades, genius classes have been turning out the leading lights of China's science and technology sectors. It is hard to overstate how essential they have been to the development of the companies now challenging US tech dominance, especially in AI, robotics and advanced manufacturing.

Genius-class graduates include the founder of TikTok's parent company, ByteDance, and the core developers behind its powerful content recommendation algorithm. Both leaders of China's two biggest ecommerce platforms, Taobao and PDD, came from the genius stream, as did the billionaire who started the food delivery "super-app" Meituan. The two brothers behind the chipmaker Cambricon, now one of the leading Chinese rivals to Nvidia, were in genius classes. So were the core engineers behind leading large language models at DeepSeek and Alibaba's Qwen, not to mention Tencent's celebrated new chief scientist, poached from OpenAI late last year. The list goes on.

China's genius classes differ in important ways from talent streams in the west. First, the system dwarfs its international competitors in scale. Second, it is state-driven. China graduates around five million majors in science, technology, engineering and maths every year, according to the state media Xinhua, compared with about half a million in the US.

Tens of thousands of these graduates are genius-class students, taken out of regular classes for an intense period of study between the ages of 16-18. While others swot for China's feared college admissions exams, the *gaokao*, those on the genius path have the chance to bypass that fate altogether, bagging places at top universities before they are out of high school, depending on their results in starry international competitions. The best students continue to more advanced talent schemes at the top Chinese universities, such as the elite computer science programmes at Tsinghua and Shanghai Jiao Tong universities.

When Jensen Huang, Nvidia's Taiwanese-American CEO, called Chinese AI researchers "world-class" last year, he was likely thinking of the genius-class grads who are building the country's tech powerhouses such as DeepSeek and Huawei, as well as AI companies internationally. "You walk up and down the aisles of Anthropic or OpenAI or [Google] DeepMind," said Huang last May, "there's a whole bunch of AI researchers there, and they are from China . . . They are extraordinary and so the fact that they do extraordinary work is not surprising to me."

A year ago, when the Chinese AI start-up DeepSeek shocked the world with the launch of its high-performing large language model, R1, at a fraction of the cost of its international rivals, many western observers wondered how a small team of Chinese researchers could be in a position to challenge American AI supremacy. The genius class is a big part of the answer.
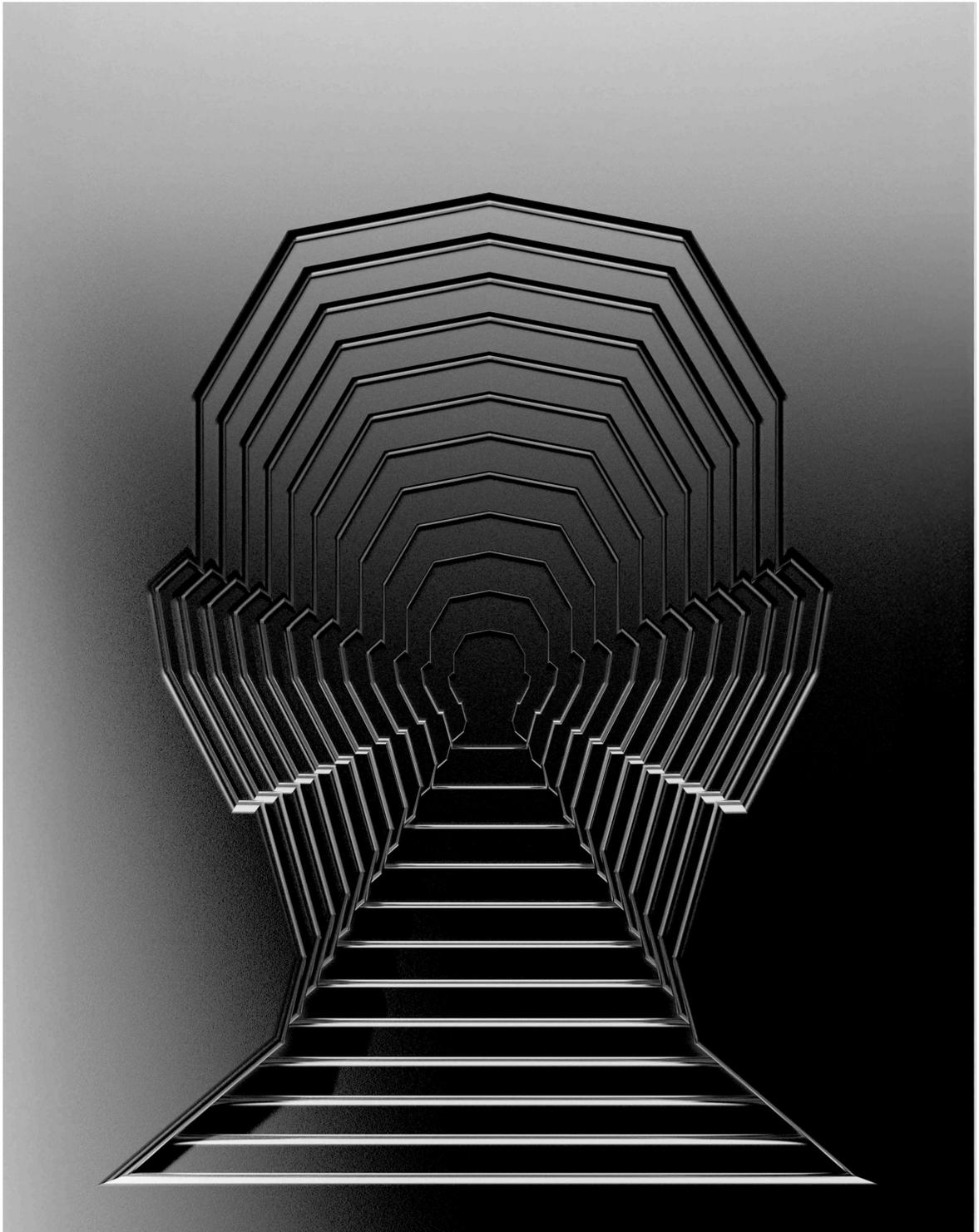
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When Wang Zihan started his internship at DeepSeek in 2024, at the age of 21, he had no idea he was joining a team that would soon rattle America's dominance in AI.

The prevailing narrative in Silicon Valley — and Washington DC — at the time was that US export controls were successfully bottlenecking Chinese progress in AI, which was trailing American efforts by one to two years. AI companies in China were understood to be merely copying the models released by OpenAI and Meta.

Wang worked on DeepSeek's V2 model, a predecessor of the foundation for the R1 model that would, a few months later, propel the company into the headlines in a Sputnik moment. DeepSeek had beaten many of its US rivals, producing a world-class reasoning model using significantly fewer advanced chips than those of its international peers. While OpenAI's models remained closed, DeepSeek made its entire development process public and R1 was open for anyone to download.

Unlike many established Chinese tech start-ups, DeepSeek's team was almost entirely homegrown. Its reclusive founder, Liang Wenfeng, was especially proud about his domestic talent pool. "We want to grow our own top talents, otherwise China will always be a follower," he said in 2024, in a rare interview with Chinese media.

Working at DeepSeek was a thrilling time for Wang. "No KPI [key performance indicators], no hierarchy, no one at your back, and endless resources for you to experiment new ideas," he told me over a video call. He was part of a team of more than 100, almost all of whom came from genius classes across China. "My education background was one of the least shiny of them all. I was lucky with my timing." His teammates came mostly from China's top two colleges, Tsinghua and Peking Universities, as well as Zhejiang University, Liang's own alma mater. Almost everyone was a seasoned participant and medal winner in at least one of the big international science competitions.

Wang had entered the genius class at a top-ranking high school in Wuhan, the No.1 Middle School Affiliated to Central China Normal University. In Wuhan, one of the most densely populated cities in central China, competition for school and college places is among the fiercest in the country. "The education I had growing up was extremely hard, but pressure and cut-throat competition makes one learn the best," he said. "You feel like, after that, there's no challenge in the world I can't take on."

Unlike many of his classmates, Wang, who liked history and represented his high school in the mock UN debates in Beijing, was not laser-focused on science. He thinks his interest in humanities may have been helpful in his later AI work. One of DeepSeek's secrets, allowing it to excel in areas such as feng shui, commonly used in Chinese fortune telling, has been to use human experts called *Baixiaosheng* (Chinese for "know-it-all") to train the model for the sorts of knowledge, mostly humanities-related, that would otherwise be difficult to attain from browsing publicly available data. Though DeepSeek has never acknowledged it openly, some have speculated that this feature might be why its model performs significantly better in those areas than competitors.

Wang left DeepSeek last year to pursue a PhD at Northwestern University in the US. He told me he wanted to see the world and experience different cultures. He is not sure yet whether he will stay or return home after finishing his studies. He knows a few Chinese PhDs who have had their US visa applications rejected. "More Chinese students, who make up about half of science major PhDs here, are considering going back now because of the uncertainty. If you have to live with the risk of getting kicked out any day, it's too much pressure," he said.

"Plus, China is doing really well."

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China's top-down emphasis on science education can be traced back to the years after the second world war. In 1958, Chairman Mao Zedong launched his Great Leap Forward campaign, aiming to rival western superpowers in military might and heavy industry. The plan had disastrous results including mass starvation and millions of deaths. But over the decades that followed, the message that science was the key to national progress continued to echo through classrooms and homes.

To a society that had for centuries prioritised the humanities over technical or scientific training, the shift had profound implications. A blunt slogan on the wall of many local education bureaus by the 1980s read: "Produce talent quick and early." A nine-year compulsory and almost free schooling plan was implemented to elevate the education level of the population. Meanwhile, in a handful of top schools across the country, the genius classes emerged to groom the most promising young minds and to see whether Chinese talents could beat their rivals on the world stage.

The International Science Olympiads are a series of annual competitions for high-school students, each run by its own organising body and hosted by a different nation every year. Participating countries send a team of their best students after running national selection exams, hoping to win gold. The maths Olympiad was introduced first, in 1959. Other competitions in physics, chemistry, computer science, biology and more were added later.

We want to grow our own top talents, otherwise China will always be a follower

Liang Wenfeng, DeepSeek founder

In 1985, two Chinese students were the first to participate in the International Mathematical Olympiad held in Joutsa, Finland. They brought back one bronze medal between them. It was a milestone, demonstrating that Chinese students were capable of competing alongside the Russians and Americans who dominated the podiums. The following year, China sent a full team of six students to the Olympiad in Warsaw. They returned with three bronze medals, a haul that won them national fame. A handful of top high schools were encouraged enough to allocate special resources, extremely scarce at the time, to create classes tailored to the super talented, specifically to groom them to compete in Olympiads and bring back medals for China. A similar strategy was implemented to find and train top athletes.

The classes quickly became a standard feature for thousands of schools — and the results were impressive. As the years passed, Chinese teams started to sweep most of the gold medals at Olympiads, far exceeding their rivals. In 2025, the Chinese national teams sent a total of 23 contestants to the Olympiads: 22 came home with gold medals.

Starting in the 2000s, university admissions were reformed, giving more flexibility to colleges to allocate places without relying solely on the results of the *gaokao*. National competitions were set up for students at the end of their sophomore year of high school. Those who won top prizes in the national exam could receive direct admission to one of the 985 Project universities, China's 39-member Ivy League equivalent.

The education I had growing up was extremely hard. You feel like, after that, there's no challenge in the world I can't take on

Wang Zihan, genius-class graduate

The chance to skip the *gaokao* was a strong incentive for students to participate in the genius stream. The traditional pathway for high-school students in China is three years of study in the *gaokao*'s mandatory subjects of Chinese, English and Maths, as well as three more chosen subjects from physics, chemistry, biology, history, geography and politics. Exams in all six subjects are taken at the end of the third year. Genius-class students, on the other hand, focus on their "competition subjects". A student competing in the International Physics Olympiad, for example, needs to not only finish three years of high-school physics but also at least half of the college-level syllabus, in order to be competitive enough to take the national exam. The very dedicated might not study much else at all.

As the number of students on the genius path grew, parents began to complain. It was not possible for everyone in a genius class to qualify for direct college admission — only about 3 per cent make it each year. The rest are sent back to the *gaokao* route — with only a year of high school left to prepare for the daunting exams. In response to the complaints, many classes modified their curricula to provide a more well-rounded education, dedicating more time to English and Chinese literature. At the end of 2025, China's education bureau tightened its policy, allowing only the top 10 per cent of the national competition prize winners to qualify for direct admission to Tsinghua and Peking Universities.

New academic focuses have also emerged. There has been an increasing interest in computer science and technology, spurred by the exponential growth of the industry. The informatics Olympiad has overtaken maths and physics to become the most popular. And the rise of AI has put this shift into warp-speed. As early as 2017, China outlined the development of AI as a "key national growth strategy", with talent building identified as one of the most important priorities. In the following year alone, 35 new special classes with the keyword "AI" in their names were founded at high schools and universities.

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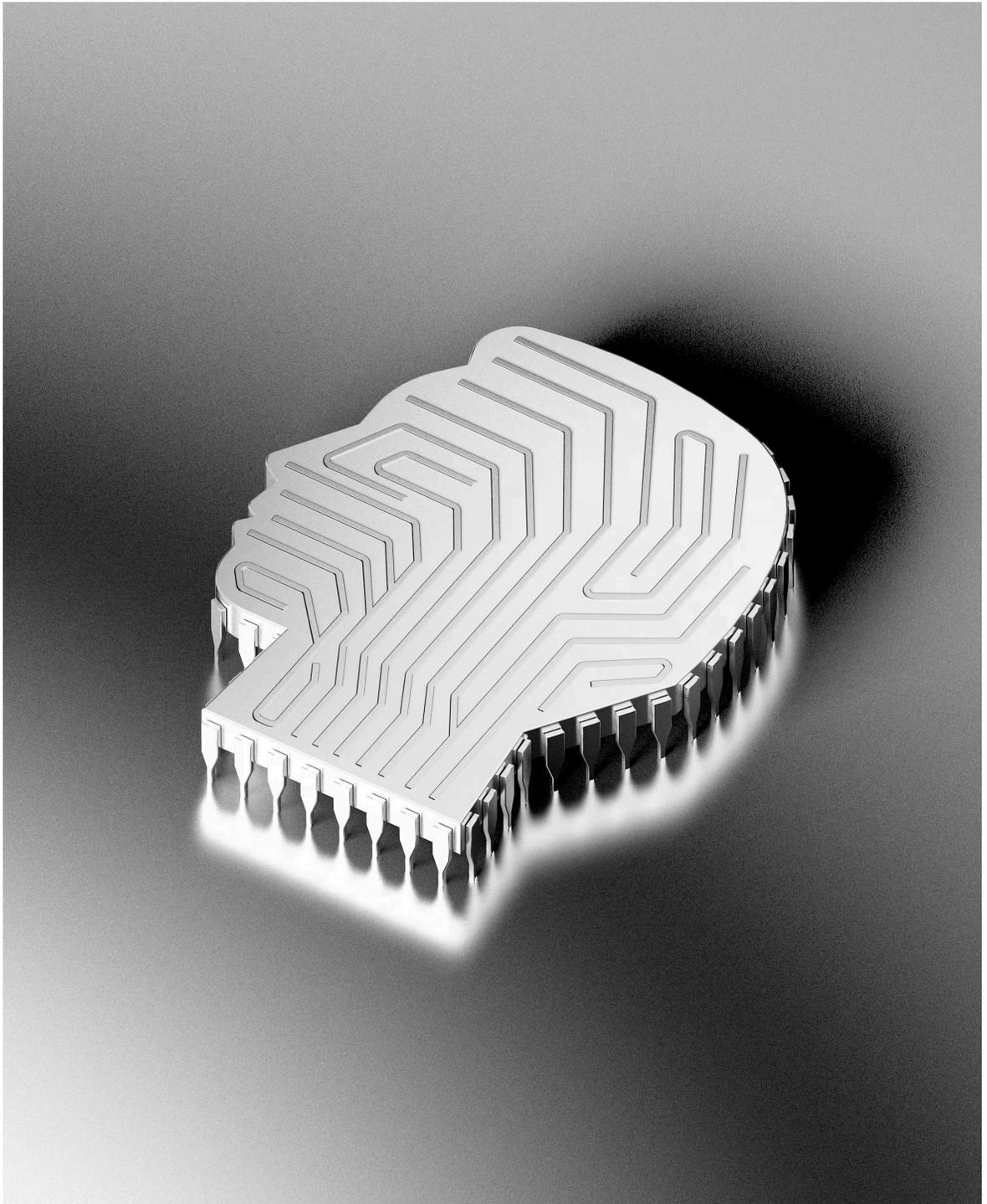
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One of the most prominent college-level genius programmes in China is Tsinghua University's Special Pilot Class for Computer Science. It is better known as "Yao Class", after the famed Chinese computer scientist Andrew Yao who teaches it. Yao, who trained at Harvard and taught at Princeton, is famous for his pioneering work in the fields of quantum computing and cryptography. He is the sole Chinese winner of the Turing Award, sometimes called the Nobel Prize of computer science.

Given that, Yao's position in American academia seemed well-entrenched. Yet, in 2004, he left his tenured teaching job at Princeton to found a computer science undergraduate programme at Beijing's Tsinghua University. It was a symbolic move seen as evidence of the shifting power dynamics in the tech race between the US and China. Yao's ambition was simple: to establish a talent-training hub in China on an equal footing to those at MIT and Stanford. Less than a decade later, by 2018, he was telling an interviewer, "My goal has been achieved . . . I think our students are actually better now [than those from the top US schools]."

One of the first students to be selected for the Yao Class was Lou Tiancheng, the co-founder and CTO of Pony.ai, a robotaxi start-up worth $6.9bn after its IPO last year. Lou was a genius-class champion. He won a gold medal in the informatics Olympiad at high school. Armed with that prize, he had his pick of every top university and programme. It wasn't a difficult choice, he told me last September: "I had no hesitation, because of Professor Yao . . . I wanted to learn from the best and with the best."

Yao Class starts with about 30 students per year, each of them the best of the best from competitions and *gaokao*. Its 2019 cohort of 27 students, for example, consisted of 24 students with gold medals and three *gaokao* number ones in their provinces, according to a school report.

Lou thrived at Tsinghua, continuing to participate in the world's biggest computer science competitions. After winning two consecutive championships at Google Code Jam and other big prizes, he became known as China's top coder. Now 40, he still joins coding competitions every year, despite his busy schedule managing one of China's leading autonomous driving companies. "It's like an annual polishing so I don't get rusty," he said.

Lou credits the genius-class system with encouraging the kind of self-learning that helps students tackle the toughest problems, some of which even their teachers can't solve, rather than rely on the rote learning required by the *gaokao*. What he learnt also contributed to the most strategic overhaul at Pony.ai in 2020, he said. His start-up was reaching a plateau when he realised they needed to shift from the original model of humans teaching robotaxis what to do, to a new one in which humans would define the goals for the robotaxis and then let them learn by themselves.

I've witnessed first hand how China has grown from having zero AI talent 20 years ago to mass producing them

Dai Wenyuan, genius-class graduate

It was a difficult decision, one that meant spending years building an autonomous driving-world model for the computer to learn in by itself. But Lou thinks it paid off, and that it might even signal a path towards the destination of artificial general intelligence (AGI) — a highly autonomous system that would outperform humans at various tasks. "We were, and still are, determined that this is the right path to ultimate intelligence in autonomous driving," Lou told me. "I don't think AGI will emerge the way many people expected it to, in the way of general intelligence such as LLM. But, in sector after sector, AI will reach the level of human intelligence and better, if trained properly. Autonomous driving should be one of the first to get there. It could happen within five years."

Meanwhile, Lou is implementing this guided self-learning theory in the education of his own daughter, who is still in primary school. "We set goals for her and teach her the basic disciplines. The rest she has all the freedom to explore."

Of course, out of the millions of students who have trained hard in genius classes over the years, there are bound to be some failures and outliers. I was one.

As a teenager, my high scores in maths propelled me into the genius class at my high school, one of the best in the eastern city of Hangzhou. Despite my interest in reading and writing fiction, the weight of expectation from teachers and parents was simply too strong to resist. I remember an official from the district education bureau imploring me: "You have a chance to win a medal in science, and you want to waste it on writing about imaginary characters?" He had been invited by my headmaster to persuade me and another stubborn student to join the talent stream. Of course, we did.

My first year of high school was miserable. While we shared English and Chinese teachers with the regular classes, we in the genius class had our own dedicated teachers in maths, physics, chemistry and biology. Each student was expected to choose maths and at least one more subject as their major, and then take extra classes dedicated to competition training. I chose chemistry as the seemingly least boring option, and embarked on two years of intense training, during which we had to finish the three-year high school curriculum and about half of college-level chemistry and maths, before sitting the national competition at the end of the second year.

To make time for such a workload, our class simply gave up on history, geography and politics. There was a debate about whether to keep PE. The school eventually decided in favour, reasoning that students would need to maintain good health in order to sustain such intensive study. I read my fiction in secret on the side, tearing up novels into 100-page booklets and hiding them in my brick-thick textbooks. As a result my scores were not great, and I was generally seen as hopeless at winning prizes and bringing honour to our school.

One day, something dawned on me during a talk given by a medal-winning alumnus. If I ranked highly enough to qualify for a direct college admission, I could enjoy the entire third year of high school in total freedom. No more school, homework or mock tests. If I didn't, the third year preparing for *gaokao* would be even worse than my first.

Newly incentivised, I began to study chemistry seriously and, surprisingly, I found it enjoyable. The immersive learning environment created a vacuum of sorts, blocking out the distractions. Succeeding in solving a difficult problem felt precious. My classmates were stimulating, pushing me to want to learn more. I was among eight students from my class to win a prize and qualify for direct college admission. My final score was just one point above the cut off. I had dodged the ferocious *gaokao*.

A year of relative freedom did indeed follow. While everyone else studied day and night, the students who had already secured university places were assigned by the school to clean staircases among other odd jobs. But some of us started to sneak out, cycling for an hour to visit the best noodle shop and going to the movies, trying to make up for two lost years buried under books.

The time came to choose a college and a major. I was torn between chemistry at Peking University and journalism at Fudan University, both the best in China, but completely different paths. Then came the test to choose a national team for the chemistry Olympiad. My score was 23 out of 100. All the chosen candidates got full marks. I felt hopeless. In the end, I was the only one from my class to pick a non-science college major. Out of the 50 students in my batch, about one-third now hold senior positions at tech-related companies in China and the US. The others generally fared well too, scattered throughout finance, healthcare and academia.

China's genius plan is certainly paying off on the national level. On an individual level, though, I question whether the programme was really worth it for all of us who have participated, willingly or unwillingly, in the past decades. After all that studying, I, for one, can barely remember my periodic table now. What does endure, though, is the curiosity to question, the discipline to reason and the courage to face the unknown.

Dai Wenyuan, a 43-year-old genius-class graduate and global coding competition champion from 20 years ago, told me that he sees talent as China's key advantage in a global AI race. "There have been more than 1,000 registered generative AI models [in China], which is unthinkable elsewhere, because where else do you find teams of engineers enough to build on such scale?" he said.

In 2014, Dai founded Fourth Paradigm, an AI software business that has made him a billionaire. On the side, he still coaches the coding competition team at his alma mater, Shanghai Jiao Tong University. "I've witnessed first hand how China has grown from having zero AI talent 20 years ago to mass producing them," he said. "Some of our most cutting-edge work is now done by fresh graduates. The real geniuses to change the world soon could well be among them."

Zijing Wu is the FT's Asia tech correspondent

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