

# China's Tech Revolution

High Speed Trains, EVs, AI, 5G & Innovation






For Columbia Alumni Fairfield, CT Club

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# Agenda

## Context of Growth Drivers and Key Technological Developments

-  **Electric Vehicles & Green Tech** – China's leadership in adoption and battery innovation.
-  **High-Speed Rail & Infrastructure** – The world's largest, cutting-edge network.
-  **AI & Automation** – From smart cities to AI-powered legal tools (like Anytime AI's work).
-  **Digital Payments & Fintech** – How mobile payments became a way of life.
-  **Connectivity & 5G** – The role of advanced telecom in enabling innovation.

## China's Challenges and Discussion

*Source: All information presented here are sourced from the public domain; All videos from Youtube*

# China's Shift from "Made in China" to "Made Intelligently in China"

- **Past:** Manufacturing hub for low-cost goods
- **Now:** Leader in EVs, AI, 5G, high-speed rail, digital payments
- **Why it matters:** Affects global supply chains, tech competition, and consumer trends

# Key Drivers of Shift and Growth

- Government policies ("Made in China 2025")
- "Dual-Circulation" strategy to increase domestic consumption
- Massive R&D investment (#2 globally after the US)
- Tech giants (Huawei, BYD, Alibaba) competing globally
- 3.6M STEM graduates/year, ~60% of the world's total

# High-Speed Rail & Infrastructure

- **World's Largest Network** (40,000 km, about 2/3 of the world's total)
  - Beijing-Shanghai: 1,318 km in **4.5 hours** (350 km/h)
  - New **CR450 trains** (2025) targeting **450 km/h, world's fastest** non-maglev
- **Maglev Breakthroughs**
  - Shanghai Maglev (430 km/h, operational since 2004)
  - **Prototypes:** 620 km/h maglev and 1000 km/hr vacuum maglev (under test)
- **Global Exports**
  - Jakarta-Bandung HSR (Indonesia, opened 2023)
  - Competing with Japan for Thailand, Malaysia projects

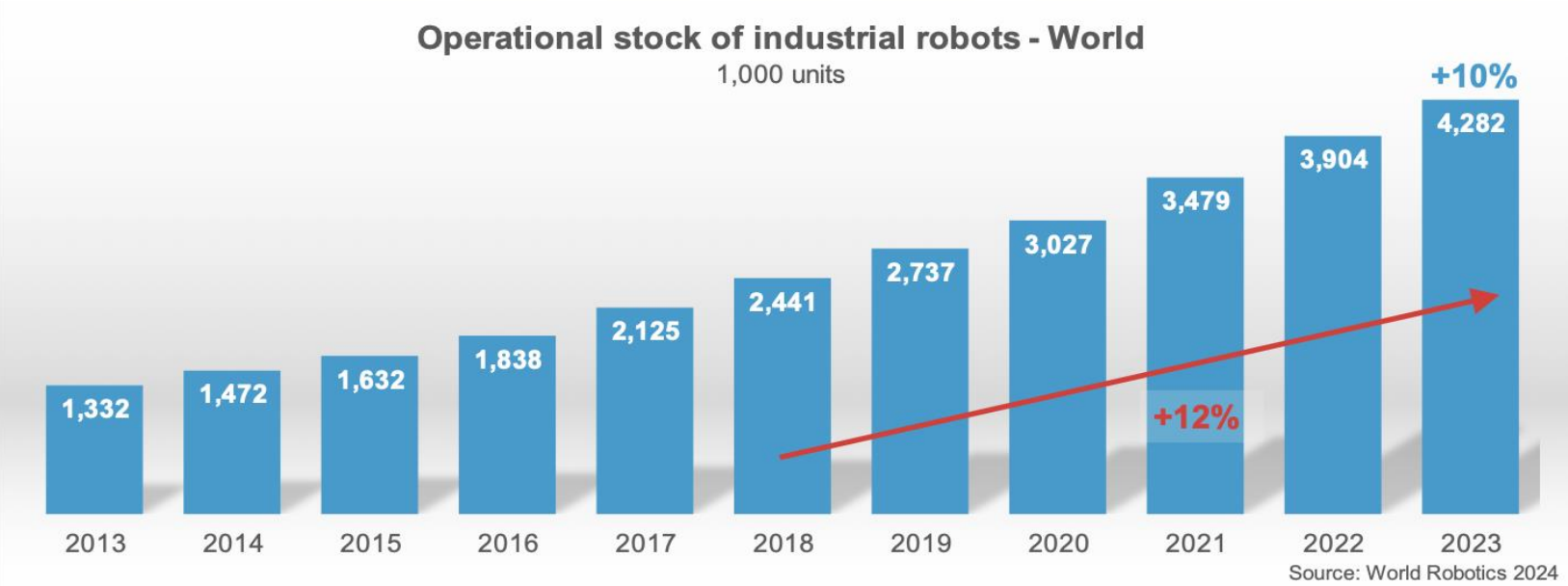
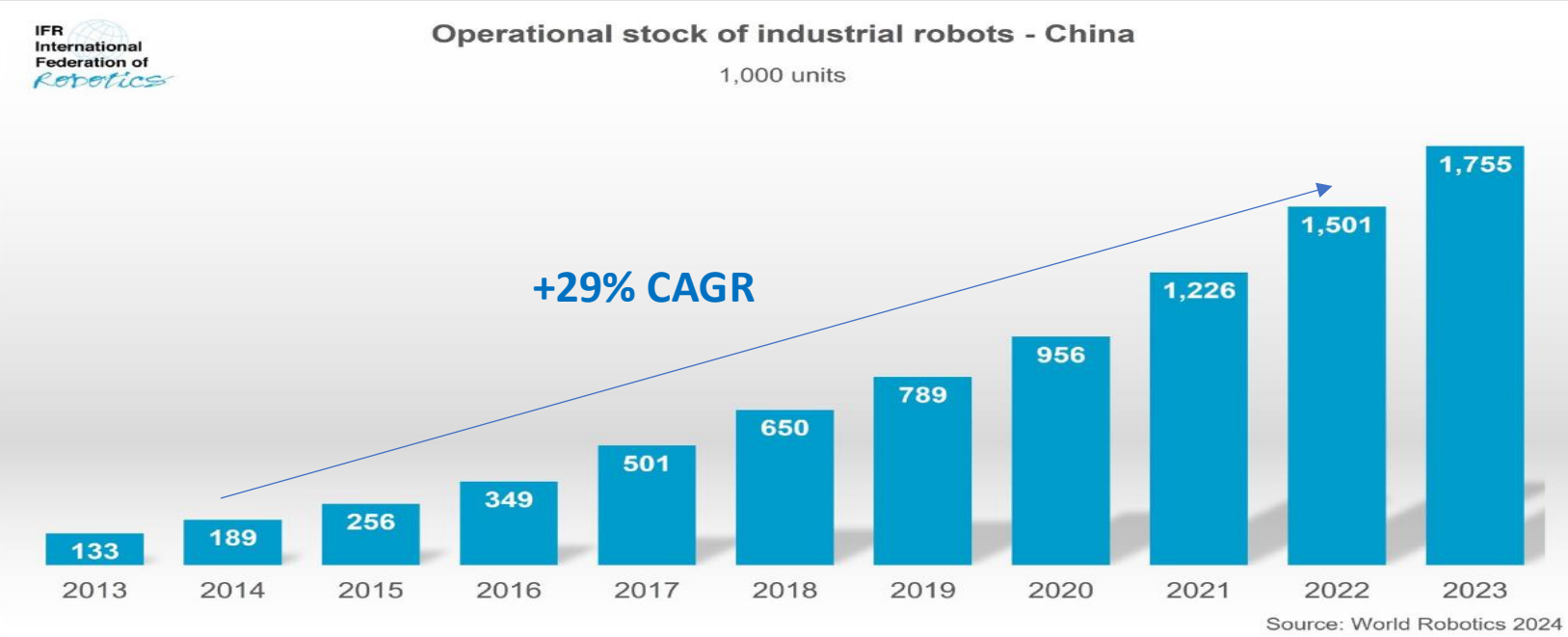
# Growth of China's High-Speed Rail Network



# High-speed rail videos

- CR450 <https://www.youtube.com/watch?v=ByDwS1OPjLM>
- Three infrastructure examples:  
<https://www.youtube.com/shorts/AWeXHDR2Ik8>

# Robot Decade – from 10% to 41% of world's total



# Video: Robots

- Baidu robotaxi ride (3 min):  
<https://www.youtube.com/watch?v=FwABzdr5eIM>
- 16 Robots Dancing in the Lunar New Year Celebration  
[https://www.youtube.com/watch?v=Fw\\_dSNxhhY4](https://www.youtube.com/watch?v=Fw_dSNxhhY4)

# Electric Vehicles (EVs) & Green Tech

- **Market Dominance**

- China is the world's largest EV market (60% of global sales)
- BYD overtook Tesla starting 2023 as top-selling EV brand
- NIO, Xiao Peng, Li Auto – premium EV challengers

- **Battery & Charging Tech**

- CATL (world's largest battery maker) – sodium-ion & solid-state batteries
- Ultra-fast charging networks (NIO's battery swap stations – 3-min swap)

- **Global Expansion**

- BYD exporting to Europe, Southeast Asia, Latin America
- Tesla's Shanghai Gigafactory (supplies Asia, Europe and North America)

# Videos: EVs

- BYD advanced factory:  
<https://www.youtube.com/watch?v=LsUpWRaOyuU>
- NIO battery swap demo:  
<https://www.youtube.com/watch?v=aBdQQxgxDrY>

# AI and Applications

- **Major Players**

- **DeepSeek** – ChatGPT rival, integrated into search, cars
- **SenseTime** – Facial recognition leader (used in surveillance, retail)
- **Alibaba Cloud** – AI for logistics, healthcare

- **Applications**

- **Surveillance:** 600M+ CCTV cameras, AI-powered tracking
- **Autonomous Driving:** Baidu Apollo (robotaxis in Beijing, Wuhan)
- **Healthcare:** AI diagnostics (detecting cancers from scans)

# Drones

- **DJI's Global Dominance (70%+ market share)**
  - **Consumer drones** (Mavic series)
  - **Industrial drones** (agriculture, disaster response)
  - **Delivery drones**
  - **Swarm drones**

# Video: Drones

- Drone swarm light show: <https://www.youtube.com/watch?v=Vj20xNDJrsU>
- Delivery drone, Self-flying Taxi and Tri-fold Phone: <https://www.youtube.com/shorts/7l9vQKidc0c>
- Fire-fighting drone: <https://www.youtube.com/shorts/IYYvLM0K0zE>

# Semiconductor & Chip Manufacturing

- **US Sanctions & China's Response**

- **Huawei** banned from TSMC (2020), SMIC restricted
- **Huawei's 7nm Chips** – breakthrough despite sanctions
- **SMIC's** 7nm chip (2021) → 5nm chip (2025)

- **National Self-Sufficiency Push**

- \$150B+ invested in domestic chip production
- Yangtze Memory (NAND flash chips) competing with Samsung

# Video: Chip Manufacturing

- SMIC's journey into 3nm technology:  
[https://www.youtube.com/watch?v=Z1FlFagdg\\_8](https://www.youtube.com/watch?v=Z1FlFagdg_8)
- Huawei Mate 60 Pro with SMIC chip:  
<https://www.youtube.com/shorts/srQBVAe47uo>

# Digital Payments & Fintech

- **Mobile Payment Dominance**

- Alipay + WeChat Pay = 90%+ market share
- QR code payments everywhere (street vendors, taxis, hospitals)

- **Digital Yuan (e-CNY)**

- World's first major CBDC (central bank digital currency)
- Used in 2022 Beijing Olympics, now expanding

- **Face Recognition Payments**

- Alibaba's "Smile to Pay" – no phone needed

# Video: Digital Payments

- Mobile Payment without Cards & Cash:  
[https://www.youtube.com/shorts/pFLvoQ\\_xCrU](https://www.youtube.com/shorts/pFLvoQ_xCrU)
- Payment with Hand or Facial Recognition:  
<https://www.youtube.com/watch?v=dFjSTEYbuxA>
- Digital Yuan: <https://www.youtube.com/watch?v=zTmitk0BB1o>

# Telecom & 5G Infrastructure

- **World's Largest 5G Network**
  - 2.3M+ 5G base stations (vs. ~500K in the US)
  - Coverage even in rural areas
- **Huawei's Role (Despite Sanctions)**
  - Leader in 5G patents
  - Building networks in Africa, Middle East
- **6G Research Already Underway**
  - China launched world's first 6G test satellite (2020)

# Video: Telecom Infrastructure

- How 5G is transforming China:  
[https://www.youtube.com/watch?v=2SYZ\\_sZWZ\\_U](https://www.youtube.com/watch?v=2SYZ_sZWZ_U)
- 5G in China vs. US:  
[https://www.youtube.com/watch?v=r\\_KQ19aisYs&t=50s](https://www.youtube.com/watch?v=r_KQ19aisYs&t=50s)
- 6G: <https://www.youtube.com/watch?v=YJRy9gWIWUA>

# Living and Touring in China

- 4 Chinese Cities in 1 minute:  
<https://www.youtube.com/shorts/xOnXrsF7vYM>
- Living in Beijing vs. NYC:  
[https://www.youtube.com/watch?v=cnW\\_sM7Q-UM](https://www.youtube.com/watch?v=cnW_sM7Q-UM)
- ChongQing (32M people, the most populated city)  
<https://www.youtube.com/shorts/32VbhkrVS1w>

# What's Next?

- **AI & robotics application in more industry verticals**
- **Quantum computing** (China leads in satellite quantum comms)
- **Commercial Space** (private firms like Galactic Energy)
- **Biotech** (gene editing, mRNA vaccines)

# China's challenges

- **Geopolitical tensions & decoupling risks**
- **US-China Tech War** (semiconductors, AI, EVs)
- **Transitioning economy** focusing on export to domestic consumption
- **Job market:** labor supply way exceeds demand
- **Fast aging population**

# Discussion

- **No longer just a factory for the world, China is a lab for the future**
- **Investment & collaboration opportunities**
- **Travel, living and education over the next 50 years**

**Welcome to China**