Building & Stumbling Blocks for China’s AI Ambitions

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To understand the state of play in China’s AI ecosystem…
We have to break it down into its core building blocks
The Building Blocks

The Data
The Talent
The Companies
The Plan

Coming soon: The Chips
If AI were a rocket...

Data is the rocket fuel. For many AI applications, without it you go nowhere and the more you have, the further you go.
AI talent—machine learning PhDs, algorithm engineers—are the rocket scientists, designing the rockets and adding the fuel.
AI companies are the rocket companies that gather the data, employ the scientists, and commercialize the rockets.
The **government plan** is the policy environment that rocket companies act within, including subsidies, regulations on launches, building codes, and public partnerships.
The Data

Data has many dimensions for AI systems: breadth, depth, diversity, access, and quality.

“more” does not always = better
China’s data strength: depth

Micro Loans
This service generates data on small-scale lending and borrowing by users, services that are more widely adopted in China because the country never fully embraced credit cards.
This can be used to optimize products…

Or enhance surveillance…
The Talent
The Talent

Where are the world’s top AI researchers?
Where are they now?

**Current Country Affiliations of Top 1% AI Researchers**

<table>
<thead>
<tr>
<th>Country</th>
<th>Number of Researchers</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>128</td>
</tr>
<tr>
<td>UK</td>
<td>20</td>
</tr>
<tr>
<td>Japan</td>
<td>10</td>
</tr>
<tr>
<td>Italy</td>
<td>5</td>
</tr>
<tr>
<td>Israel</td>
<td>3</td>
</tr>
<tr>
<td>France</td>
<td>2</td>
</tr>
</tbody>
</table>

Source: Researchers with papers accepted for NIPS 2017 oral presentation (~1% acceptance rate); Country affiliation = HQ location of researchers' workplace.
Where did they go to college?

**Undergraduate Country Affiliations of Top 1% AI Researchers**

<table>
<thead>
<tr>
<th>Country</th>
<th>Number of Researchers</th>
</tr>
</thead>
<tbody>
<tr>
<td>USA</td>
<td>50</td>
</tr>
<tr>
<td>China</td>
<td>25</td>
</tr>
<tr>
<td>Israel</td>
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<tr>
<td>Germany</td>
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<td>UK</td>
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<td>India</td>
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<td>Italy</td>
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<td>Japan</td>
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<tr>
<td>Greece</td>
<td></td>
</tr>
</tbody>
</table>

Source: Researchers with papers accepted for NIPS 2017 oral presentation (~1% acceptance rate); Undergraduate country affiliation = location of researcher’s undergraduate institution.
How did they get there?
The Companies
The Companies

Has China formed a self-sustaining ecosystem of AI investors, startups and tech giants?

Where are the centers of gravity in that ecosystem?
The Plan
The Plan

How does China’s national AI plan actually work?
The Plan

National Goals,
Local Implementation
Takeaways

**Data:** *Weak in diversity, strong in depth*

**Talent:** many top researchers are Chinese, few work for Chinese companies

**Companies:** Rich ecosystem, but will the boom continue?

**Plan:** Many local applications, but can it generate research breakthroughs?
Questions going forward

Descriptive: *What are the implications for talent flows and economic impacts in the US and China?*

Normative: *How can the US and China avoid a dangerous arms race that creates powerful and unsafe AI systems?*
macropolo.org/chinai

Big thanks to my teammates on ChinAI:
Joy Dantong Ma, Jeffrey Ding (ChinAI newsletter), Annie Cantara, and Chris Roche