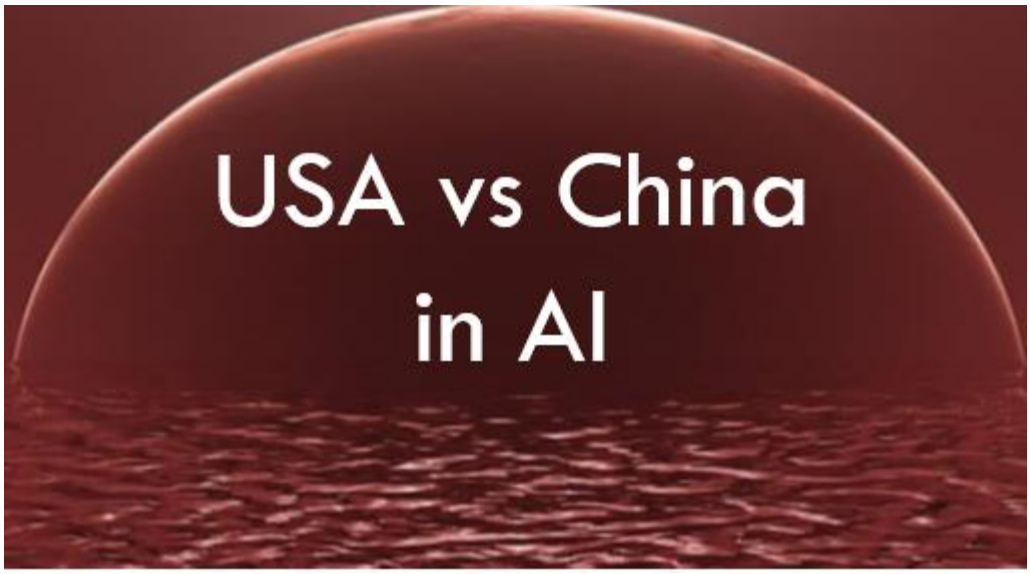

USA vs. China in Conversational AI

Yefim (Jeff) Zhuk

China is well known for its long-term vision.

In 2016 AI program created by Google won the GO game while competing with the world's best GO player.
The GO game was invented in China about 4000 years ago and losing this game to the US was not an ordinary event.
Since then, AI became a priority in China's plans.

In 2025 China plans to catch up with the US and in 2030 become the world leader in AI.
US is currently ahead in AI technology.

China's government heavily supports any innovations and experiments in that area.
China already is leading in e-commerce. No cash or checks or credit cards. All transactions are done with a regular phone.

Self-driving cars? China is building a huge new city, the size of Chicago, filled with censors, ready for AI-driven transportation.

Can we accelerate our development in the US?
Yes! With the Development Factory!

What is the Development Factory? Just imagine that you come up with a good idea, no kidding, a really good idea for your project. But the number of technical details on the way to implementation will slow you down … and soon you abandon your project. Now think that you have a big brother. (No, not that “Big Brother”.) A good mentor who can talk to you and quickly advise you in any and all directions.

One more step and we describe this mentor as a Conversational Semantic Decision Support (CSDS), a set of AI-based services that is capable to converse with you and turn your modest development ability into a Development Factory (US Patent 10956676).

Another use case is a home project development. A user approximately knows what s/he wants and an AI assistant walks a user through each step optimizing the choices.

The message from 2040: https://itofthefuture.com/book/message.pdf - is not a complete Si-Fi. This might look that way about 20 years ago, when it was written. But today, AI conversation is a reality.

Meet AI-agents here: https://aitu.us/itu/DevelopmentFactoryAndBASE.pdf

Google went even further creating a special language for such conversations with the scary thought that AI can soon become sentient, and will be able to really think and feel.
See more here:
https://www.zerohedge.com/technology/google-engineer-placed-leave-after-insisting-companys-ai-sentient

Our approach is more modest.
While providing AI conversation, we keep the leading role for a human. The Conversational Semantic Decision Support is based on traversing semantic graphs created on-the-fly during human-computer interaction.

Artificial Intelligence as well as human intelligence reveals itself in recognizing associations, and connections between multiple factors. AI presents these connections as graphs or enormous size networks.

Here is another advantage that belongs to the US and makes US superior in many AI-related fields. I am talking about Graphical Processing Units, GPU, the best tools created to perform such graph operations.

Initially created for video cards, then used for games, the GPU by Nvidia is quickly becoming the major hardware in AI platforms.

AI enters all or almost all sides of our lives, starting from medical and including farming fields.
For example, a Ukrainian startup, Esper Bionic Hand, features a cloud-hosted AI platform to develop next-gen bionic hands, lightweight, with a wide range of grips and individually articulating fingers.
See the "best tech for amputees" link below.

AI is transforming agriculture with predictive maintenance and drastically reducing labor costs.
AI and genomics are reshaping farming, building a network of hyper-efficient indoor farms.

Robots can build and manage space stations, fight fires and work in dangerous places. Most of the robots are designed today for specific purposes. But what if something unexpected happens?

Adaptive mobile robot system with knowledge-driven architecture combines knowledge engineering with robotics technology to improve robot-to-robot and robot-to-human conversations. The system helps robots to get beyond pre-built skills and develop adaptive behavior for collaborative robot teams.

The invention describes a use case when a robot system sent to clear the mine field and get across unexpected situation, for example an unknown type of a mine.

AI conversations with human-experts provide on-the-fly situational scenarios as the result of the brainstorming. The system converts scenarios into a set of models and execution services.

Ability for AI conversations is especially important in military applications, where under adversarial conditions, AI systems can easily be fooled. Ability to sharing data and AI brainstorming with human-experts become crucial.

So far, the USA is leading in all these fields. There are still untapped resources that can increase the lead.

AI developers heavily use Java and Python while developing applications. In both cases performance of the applications can be drastically improved.
-How?
Performing source code directly in hardware instead of software interpretation. Just imaging that GPU, which uses Java libraries to create and analyze connections of a graph, performs Java commands in hardware or firmware.
This is hundred times acceleration!

On the top of that, Java tools, like MySQL database and application servers like JBoss and Tomcat, would also greatly accelerate their performance in the GPU clouds, like PaperSpace.

(Hope that smart folks from Nvidia and Paperspace are reading these notes.)

Ukraine developers created another sample of a critical AI application by connecting data from a network of Starlink satellites with a network of commercial drones and a network of cannons. This is the first time when such level of robotics is used in a military conflict to defend troops against artillery attacks. Enemy artillery is quickly located and becomes a target as soon as it starts shelling. The current several-minute performance of the application can be improved to several seconds with the GPU capable to execute Java in the hardware. This might allow even intercepting the artillery fire, which would make the difference between life and death for troops and civilians.

https://www.linkedin.com/pulse/usa-vs-china-ai-yefim-jeff-zhuk/
If for some reason you have trouble opening the LinkedIn link, go here:

https://tellastory.us/album/Technology/USAvsChinaInAI.pdf

Please read the article and provide your opinion, which is extremely important to me:

- What do you think about the subject?
- Did I underestimate China's efforts?
- Do we (USA) have more cards to play in this game?
- How can the latest partnership between Nvidia and Siemens help?
- Do you think there is a space for a cautious collaboration between the US and China?

Celebrating Independence Day, I cannot help, but think that somehow, we managed to lose our energy independence.
One of the energy-richest countries, we pay others for gas and oil.
Some of our money can be used by another country to buy the latest military equipment that we left in Afghanistan and then to use this equipment against our older weapons sent to Ukraine.

- Is there a scenario where the USA can lose our technological superiority?
- What can be done to prevent such a scenario and to keep our leadership in the AI competition, maybe the most important competition of this century?

Please provide your comments on the article and of course, feel free to directly reply to me.

Happy Independence Day! | jeff.zhuk@captureknowledge.org

Read more here:
- The message from 2040:
https://itofthefuture.com/book/message.pdf

- The best tech for amputees:
https://livingwithamplitude.com/best-tech-for-amputees-at-ces-2022/

- AI transforming agriculture:
https://blog.vsoftconsulting.com/blog/how-ai-is-transforming-the-agriculture-industry

- AI and genomics reshaping farming

https://hbr.org/podcast/2020/11/how-ai-and-genomics-are-reshaping-farming

- Development Factory, US Patent 10956676,
https://itofthefuture.com/itu/HowThisWorks.pdf

- Adaptive mobile robot system, US Patent 7966093
https://patents.google.com/patent/US7966093

-AI in military applications:
https://mwi.usma.edu/artificial-intelligence-future-warfare-just-not-way-think/

-Home project development: https://dabhand.us
https://www.linkedin.com/company/dabhand-corp/

-AI development with Java and Python
https://ituniversity.us

-Ukraine connected Starlink satellites with commercial drones and cannons:
https://www.yahoo.com/now/big-guns-small-drones-become-080319545.html

COMMENTS:

Gregg W.

I hate to throw cold water on the Nvidia/Siemens collaboration, because they may just be offering glowing but false promises.

Anyway, most of my career was spent archiving and distributing weather data, and noting how reanalysis was improving the models.
Ultimately a kind of human consensus is utilized.

The military's interest in cutting edge technology of any kind is
usually the biggest funding driver.

Maintaining secrecy at the edge of AI development is paramount. Collaboration would only be allowed at a commercial application level, and then this would be tempered by profit potential.

AI competition is just one factor in the Sino/American competition to be the dominant culture in this century and beyond.

Americans must take notice. China has their own space station

up there and I believe that China will be the first to put humans on Mars.

Jeff:

While Nvidia makes miracles on the chip and data center levels,
Siemens can magnify this magic in several industries.
My expectations are high here.

I have to agree that collaboration with China on AI does not look promising today.
Maybe tomorrow...
I would prefer to see China as a partner, not as an enemy.

Michael M.

The "DabHand" project, as presented, created the impression that it is a working application whereas I don't think it is.

This piece could be the most interesting to the average consumer as a stand-alone story.

Then, of course, it needs more meat, discussion of the actual logistical issues to be overcome -- exactly what you said in the beginning about having a really good idea and not knowing how to get it accomplished.

Again, I don't know what it is behind the name but it is confusing.

Jeff:

Thank you, Michael, for your interest and questions about the DabHand project.

Let me start with the"DabHand" name.

This phrase (dab hand) meaning "expert", that peaked in Britain in about 1990, then spread to U.S.

The status of the application is "work-in-progress".

We implement rather a simple idea that a user knows what s/he wants, but needs some help in expressing this knowledge.

It takes a lot of efforts, communications, and negotiations to satisfy needs of users and service providers.

Yes, service providers have their own preferences.

Our patented semantic technology potentially helps to both sides, saving time and money.

 **Ilshat Shamsutdinov**

Jeff, my two cents on Michael M.'s insightful comment. We are on the way to releasing an MVP and nailing down our marketing strategy. Can't wait to share more details with everyone soon!

Let me start with the"DabHand" name.
This phrase (dab hand) meaning "expert", that peaked in Britain in about 1990, then spread to U.S.

The status of the application is "work-in-progress".
We implement rather a simple idea that a user knows what s/he wants, but needs some help in expressing this knowledge.
It takes a lot of efforts, communications, and negotiations to satisfy needs of users and service providers.
Yes, service providers have their own preferences.
Our patented semantic technology potentially helps to both sides, saving time and money.
Read more here: https://tellastory.us/album/Technology/about.dabhand.pdf

 **Lawrences K.**

Before our second trip to China in 2007, I read a book called China Inc. by Ted C. Fishman.
We stayed with a business executive and between what I read and saw, it became clear that its growth relied heavily on the largely knowing transfer of AI to China -- the world's worst kept secret. Long term losses traded for short term profit.

From Jeff:

Thank you, Lawrence, for sharing your experience.
I visited China several times. It is still a puzzle for me.
This is not only the biggest Communist country, but, according to Ted C. Fishman, the fastest moving engine of capitalism.
Why China students after graduation from the best USA schools used to stay here, but today prefer returning back to China for accelerated career?
Can we learn from China or this is impossible without some sort of collaboration?

 **Lawrences K.**F

First and foremost, plug the leaks. The theft of intellectual property is as bad or worse than the theft of tangible property. Second, China learned long ago that regulated capitalism is the driving force for economic prosperity. Ironically, American society is questioning itself and its commitment to free markets.

 **Monique Clevelend**

Jeff, you haven't changed. hashtag#Brillance

Steven Brinson

Monique, I agree. We have worked with some wonderful folks

 **PhD Andy Chudin**

Great article, Jeff!