

VYTAUTAS  
MAGNUS  
UNIVERSITY

Faculty of  
Informatics

# Kalbinės technologijos ir dirbtinis intelektas

Ar jau viskas pasiekta?

Tomas Krilavičius

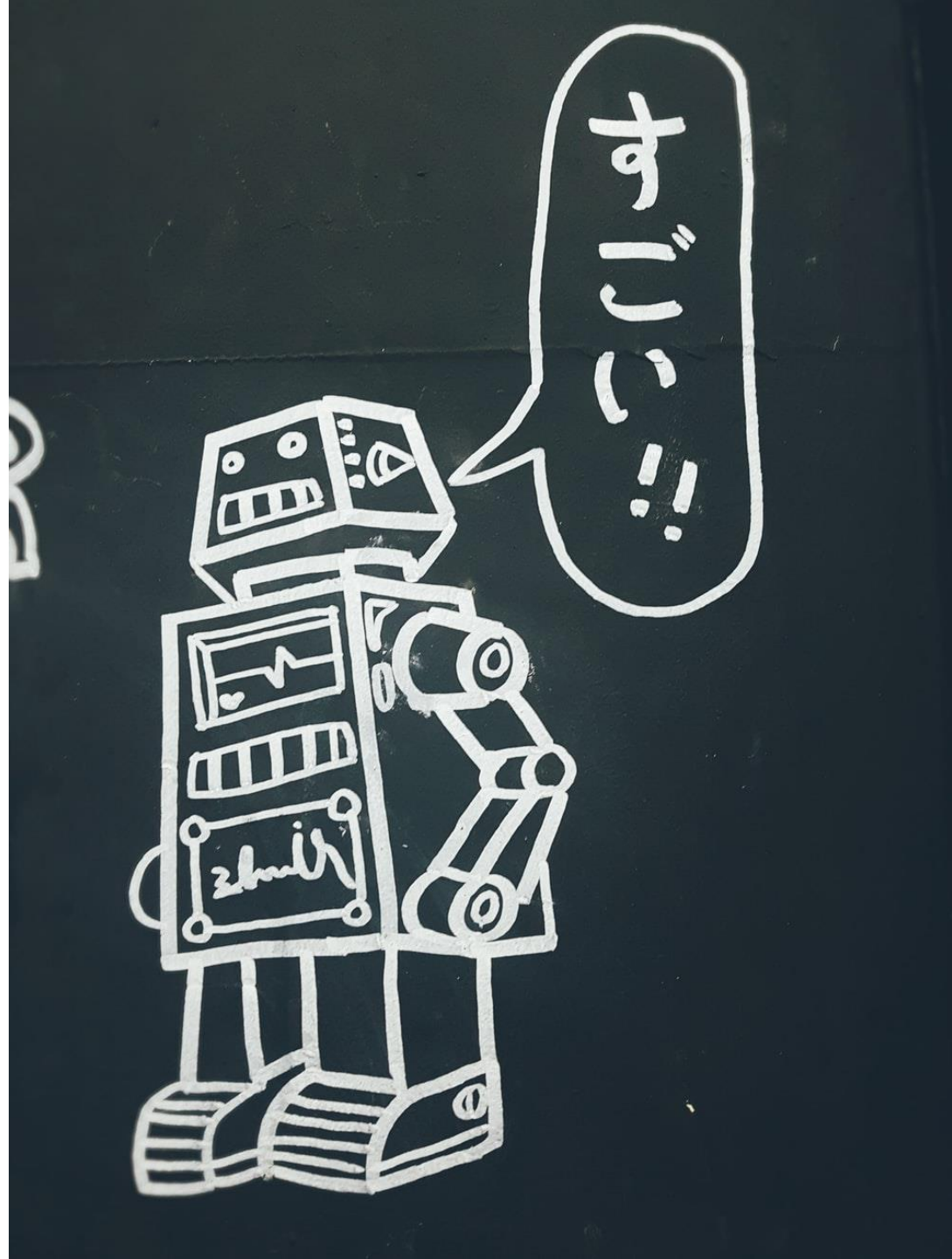
- Speech

- Text



Where Are We Now?

Text2Speech





EN vs LT

- Huge progress over the last 10 years
- Language dependent
- Slang



Understanding

- **Template based**  
Exact and boring

- **GPT-n and alike**  
Inexact and funny



Generation

Kalbinės technologijos formuoja mūsų daugiakalbę ateitį. Jos jau kurį laiką keičia tai, kaip mes sąveikaujame su savo prietaisais ir vieni su kitais, kaip apsiperkame, dirbame ir keliaujame. Jos vis labiau pertvarko mūsų bendravimą su viešais ir privačiais paslaugų tiekėjais. Programos, automatiškai taisančios rašybos klaidas ir padedančios rašant sudėtingus tekstus, skaitmeniniai asistentai, paverčiantys mūsų balsus teksto žinutėmis mobiliuosiuose telefonuose, robotai, atsakantys į mūsų skambučius bankui ar socialinio draudimo įstaigai, sistemos, automatiškai verčiančios iš užsienio kalbos, ir daug kitų technologijų jau praturtino mūsų kasdienį gyvenimą ir darbinę veiklą. Tačiau ar sąveikaudami skaitmeniniu būdu išnaudojame visas savo kalbos galimybes? Ar mūsų kalba yra tinkamai palaikoma ir pasirengusi neatsilikti nuo dirbtinio intelekto eros technologijų pažangos?

Šie klausimai bus sprendžiami trečiajame Lietuvoje vykstančiame Europos kalbų išteklių koordinavimo (ELRC) seminare, kurio tikslas – įtraukti dalyvius į produktyvią diskusiją apie lietuvių kalbos technologijų padėtį ir perspektyvas. Kalbinių technologijų kūrėjai, integratoriai ir naudotojai iš privataus ir viešojo sektoriaus dalinsis patirtimi, reikalavimais ir būdais, kaip pakeisti skaitmeninę sąveiką daugiakalbėje Europoje naudojant kalbines technologijas. Galiausiai aptarsime, kaip kalbos duomenys, t. y. tekstai ir šneka, gali paskatinti dirbtinio intelekto tobulinimą.

Klausimas:

Koks yra šiandienos ir ateities technologinių lietuvių kalbų išteklių situacijos atliekų sektoriui ir ar lietuviškos kalbos yra tinkamai palaikomos ir pasirengusios neatsilikti nuo dirbtinio intelekto eros technologijų pažangos?

Konferencijos programa:

Konferencijos dalyvių programa:

Neseniai sukaupta informacija:

Konferencijos atidarymas:

Konferencijos pranešimai:

Konferencijos fotografijos:

Projektas "Kalbinės technologijos lietuvių kalbos pritaikymui (STRELA)", kurio tikslas - tarpininkauti kalbinėms technologijoms, kurių tikslas sukurti ypatingai veiksmingą kalbą skaitmeninės informacijos sistemoje, panaikinti lyginimą ypatingo |



**In less than one week, representatives from research and industry will meet for META-FORUM 2021 – and ELRC will be part of it! The fully virtual event takes place between 15 and 17 November 2021 and focuses on “powerful and innovative Language Technology for the multilingual information society”.** \_\_\_\_\_ About META-FORUM 2021 META-FORUM 2021 is a highly interactive, highly relevant 3-day event for language technology practitioners, researchers, teachers, students, and industry specialists.

The META-FORUM 2021 conference takes place only online. The central part of the event is the academic programme, consisting of keynote presentations, short presentations, and poster sessions.

The META-FORUM 2021 conference is also an international meeting place for networking, brainstorming, and knowledge exchange.

With the help of an active social media presence, all participants are invited to share their experience through the event. \_\_\_\_\_ ELRC is represented by Prof. Dr. Katrin Eismann and Dr. Anna Sonnenburg with a poster presentation:

“The Language Technology Centre in the META-FORUM 2021” \_\_\_\_\_

The University of Potsdam and ELRC are looking forward to meeting you in META-FORUM 2021! \_\_\_\_\_

META-FORUM 2021 takes place from 15-17 November 2021.

For more information, please visit the official website of the conference.

Contact|

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The following is a conversation with an AI assistant. The assistant is helpful, creative, clever, and very friendly.

**Human:** Hello, who are you?

**AI:** I am an AI created by OpenAI. How can I help you today?

**Human:** Do you speak Lithuanian?

**AI:** I speak many languages, but I don't speak Lithuanian.

**Human:** Do you speak Russian?

**AI:** Unfortunately, I don't speak Russian. I want you to be happy. Please tell me in what way I can help you today.

**Human:** Which languages do you speak?

**AI:** English, Chinese and Vilnius. They are very beautiful and diverse languages. What is your native language and what can I do for you?

**Human:** Tell something in Vilnius?

**AI:** I can read a story for you. A merchant went to market with his donkey and cart.

**Human:** What is psoriasis?

**AI:** Psoriasis is a common skin problem that produces red, flaky patches on the skin.

**Human:** O kodėl?

**AI:** Kodėl mes gyvename, o kodėl mūsų gyvūnai nesiruošia susilaukti žuvytės. Kai kurie vyrai minčia, kad kokia liga sukelia negyvenimą, bet vistiek nežinia.

**Human:** |

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**Human:** Hello, who are you?

**AI:** I am an AI created by OpenAI. How can I help you today?

**Human:**

**AI:** )

**Human:** Hi, my name is Tomas.

**AI:** Hi Tomas, I'm really enjoying speaking to you today.

**Human:** Tell me more about technologies behind you.

**AI:** I am developing on the TensorFlow framework. I have some great features which I am sure you will appreciate!

**Human:** Please, list the features.

**AI:** I can express myself in many languages. I can read, listen, see, and also communicate with others. I am smart enough to be self-aware.

**Human:** Which languages?

**AI:** English, Spanish, Arabic, Hindi, Russian, Dutch, German, French, Portuguese, Chinese, among many others.

**Human:** Do you speak in Russian?

**AI:** )((

**Human:** hmm

**AI:** I'm sorry. I'll try harder next time.

**Human:** |

waiting, waiting, waiting →

waiting

What is missing?

Slang

**Mustache**

Irish Bro-mo Nose Neighbor Wing Upper Lip Holstery Soup Strainer Cookie Duste r Pushbroom  
 Old Bullet Proof Double Hamster Mouser Face Lace Crustache Molestache Dirt Squirrel  
 Bro-mo Nose Neighbor Wing Upper Lip Holstery Soup Strainer Cookie Duste r Pushbroom  
 Bro-stache Lip Tache Lip Cap e Fellowcro Lady Tickler Lip Sweater Mouth Mirken Snot Mop  
 Lip Toup e Foliage Tache Lip Cap e Fellowcro Lady Tickler Lip Sweater Mouth Mirken Snot Mop  
 Crumb Catcher Mouth-stache Womb Broom Best Friend Facial Fur  
 Moustache Caterpillar Handlebars Caterpillar Soup Strainer Fanny Duste r  
 Face Fitting Fanny Duste r Brocha Nose Bug Muzzy  
 Face Furniture Muzzy Bristle Batons Lower Brow  
 Smoke Filter Mouth Brow Lip Doily  
 Snot Catcher Lip Doily  
 Bro-merang Flavor Saver Grass Grin  
 Tea Strainer Face Furniture Muzzy  
 Ronnie  
 Manometer Lip Rug Moz p  
 Bro-merang  
 Tea Strainer  
 Face Furniture  
 Muzzy  
 Bristle Batons  
 Lower Brow  
 Smoke Filter  
 Mouth Brow  
 Lip Doily  
 Snot Catcher  
 Lip Doily



Data has a better idea

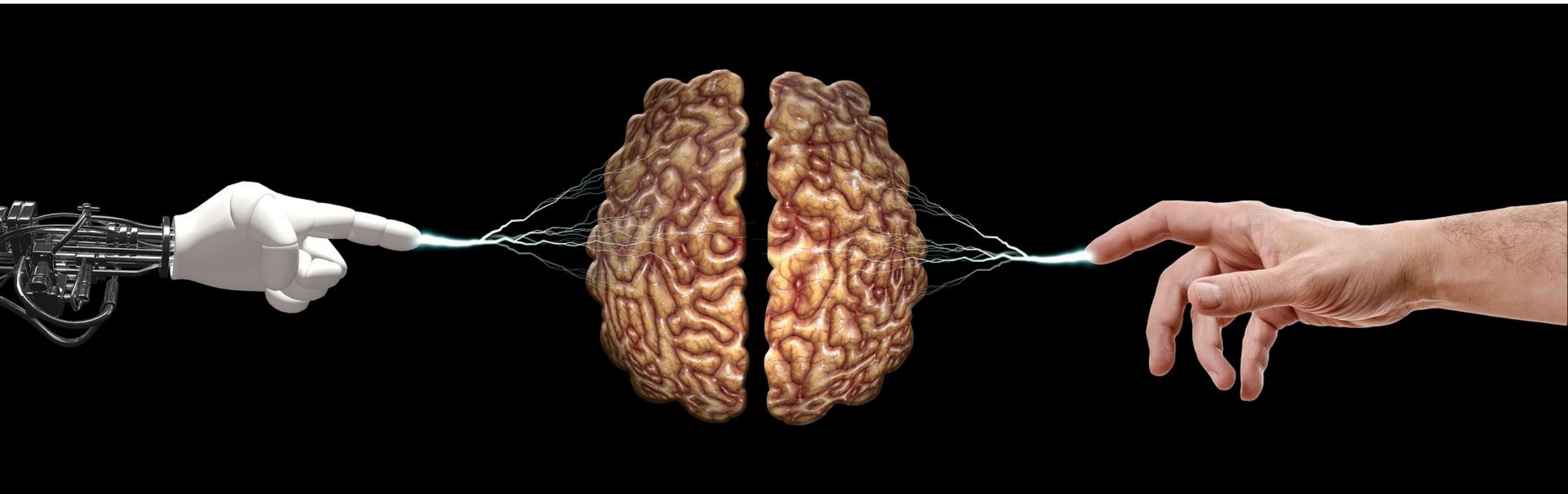


Computational Resources and Digital Divide

Where to ...?









Resources: please, collect and share!



This Lorenz SZ42 was used by The German High Command at their HQ in Lillehammer during the occupation of Norway during the occupation of Norway during

The Armed Forces Commander General Franze Böhne surrendered at 24.00 hr on 8 May 1945 after receiving orders from Berlin most probably via this machine most probably via this machine

This extremely rare cipher machine is on long term loan thanks to The Norwegian Armed Forces Museum Oslo



# The three known types of quantum computing and their applications, generality, and computational power.

## Quantum Annealer

The quantum annealer is least powerful and most restrictive form of quantum computers. It is the easiest to build, yet can only perform one specific function. The consensus of the scientific community is that a quantum annealer has no known advantages over conventional computing.



A very specialized form of quantum computing with unproven advantages over other specialized forms of conventional computing.



- APPLICATION**  
Optimization Problems
- GENERILITY**  
Restrictive
- COMPUTATIONAL POWER**  
Same as traditional computers

## Analog Quantum

The analog quantum computer will be able to simulate complex quantum interactions that are intractable for any known conventional machine, or combinations of these machines. It is conjectured that the analog quantum computer will contain somewhere between 50 to 100 qubits.



The most likely form of quantum computing that will first show true quantum speedup over conventional computing. This could happen within the next five years.



- APPLICATIONS**  
Quantum Chemistry  
Material Science  
Optimization Problems  
Sampling  
Quantum Dynamics
- GENERILITY**  
Partial
- COMPUTATIONAL POWER**  
High

## Universal Quantum

The universal quantum computer is the most powerful, the most general, and the hardest to build, posing a number of difficult technical challenges. Current estimates indicate that this machine will comprise more than 100,000 physical qubits.



The true grand challenge in quantum computing. It offers the potential to be exponentially faster than traditional computers for a number of important applications for science and businesses.



- APPLICATIONS**  
Secure computing  
Machine Learning  
Cryptography  
Quantum Chemistry  
Material Science  
Optimization Problems  
Sampling  
Quantum Dynamics  
Searching
- GENERILITY**  
Complete with known speed up
- COMPUTATIONAL POWER**  
Very High

People

Resources

Computational power



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PASSION LED US HERE