

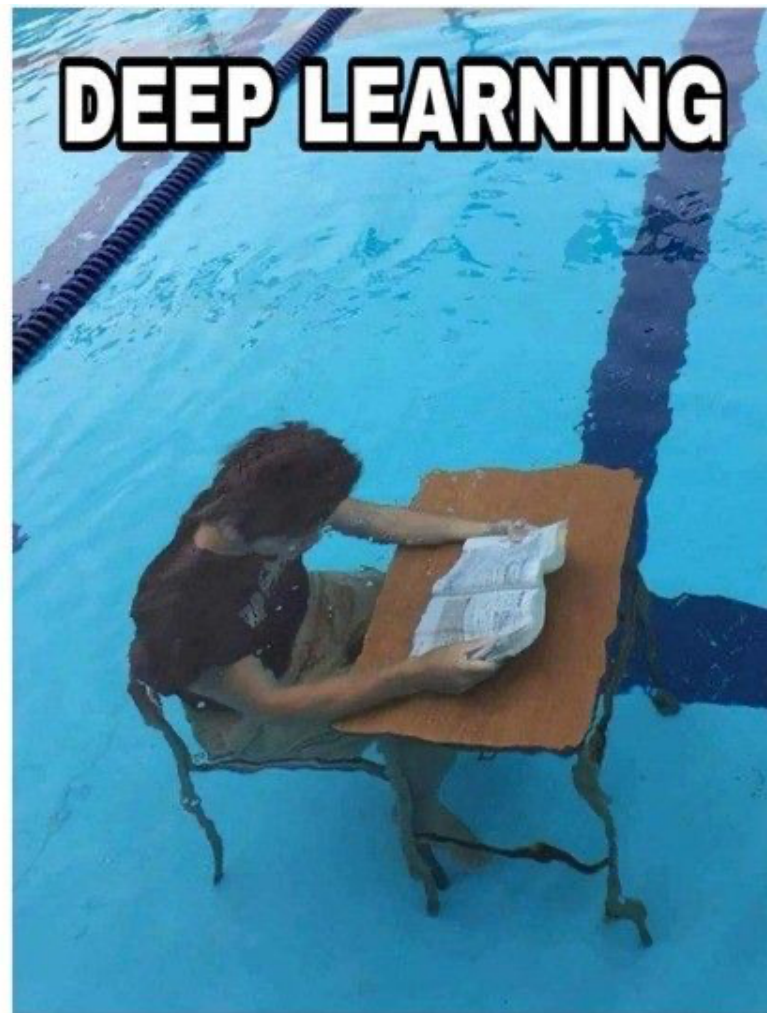
Mākslīgais intelekts biznesā: nākotnes konkurents vai partneris?

Dr. Evalds Urtans
RTU, asya.ai

Kas ir mākslīgais intelekts?



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$$\begin{aligned}i_t &= \sigma(W_i * [\mathcal{X}_t, \mathcal{H}_{t-1}] + b_i) \\f_t &= \sigma(W_f * [\mathcal{X}_t, \mathcal{H}_{t-1}] + b_f) \\e_{t,z} &= V_e \cdot \tanh(W_e * [\mathcal{X}_{t,z}, \mathcal{H}_{t-1}] + b_e) \\\alpha_{t,z} &= \frac{\exp(e_{t,z})}{\sum_{j=1}^{\tau} \exp(e_{t,j})} \\p_t &= \sum_{j=1}^{\tau} \alpha_{t,j} \tilde{\mathcal{X}}_{t,j} \\n_t &= \sigma(W_n * [\mathcal{X}_t, \mathcal{H}_{t-1}] + b_n) \\g_t &= \tanh(W_g * [p_t, \mathcal{H}_{t-1}] + b_g) \\C_t &= f_t \circ C_{t-1} + i_t \circ a_t + n_t \circ g_t \\a_t &= \tanh(W_a * [\mathcal{X}_t, \mathcal{H}_{t-1}] + b_a) \\o_t &= \sigma(W_o * [\mathcal{X}_t, \mathcal{H}_{t-1}] + b_o) \\\mathcal{H}_t &= o_t \circ \tanh(C_t)\end{aligned}$$

Kas ir mākslīgais intelekts?

- **Lineārā algebra**
- **Augstākā matemātika**
- **Varbūtību theory**
- **Informācijas theory**
- **10% programmēšana**

$$i_t = \sigma(W_i * [\mathcal{X}_t, \mathcal{H}_{t-1}] + b_i)$$

$$f_t = \sigma(W_f * [\mathcal{X}_t, \mathcal{H}_{t-1}] + b_f)$$

$$e_{t,z} = V_e \cdot \tanh(W_e * [\mathcal{X}_{t,z}, \mathcal{H}_{t-1}] + b_e)$$

$$\alpha_{t,z} = \frac{\exp(e_{t,z})}{\sum_{j=1}^{\tau} \exp(e_{t,j})}$$

$$p_t = \sum_{j=1}^{\tau} \alpha_{t,j} \tilde{\mathcal{X}}_{t,j}$$

$$n_t = \sigma(W_n * [\mathcal{X}_t, \mathcal{H}_{t-1}] + b_n)$$

$$g_t = \tanh(W_g * [p_t, \mathcal{H}_{t-1}] + b_g)$$

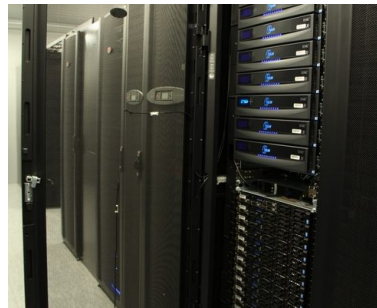
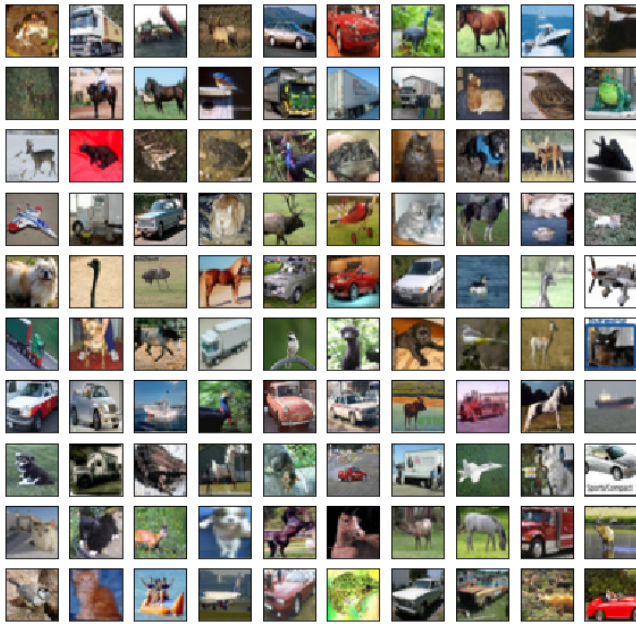
$$\mathcal{C}_t = f_t \circ \mathcal{C}_{t-1} + i_t \circ a_t + n_t \circ g_t$$

$$a_t = \tanh(W_a * [\mathcal{X}_t, \mathcal{H}_{t-1}] + b_a)$$

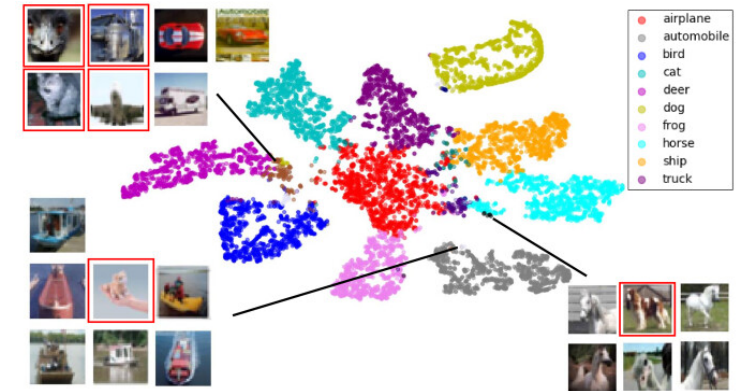
$$o_t = \sigma(W_o * [\mathcal{X}_t, \mathcal{H}_{t-1}] + b_o)$$

$$\mathcal{H}_t = o_t \circ \tanh(\mathcal{C}_t)$$

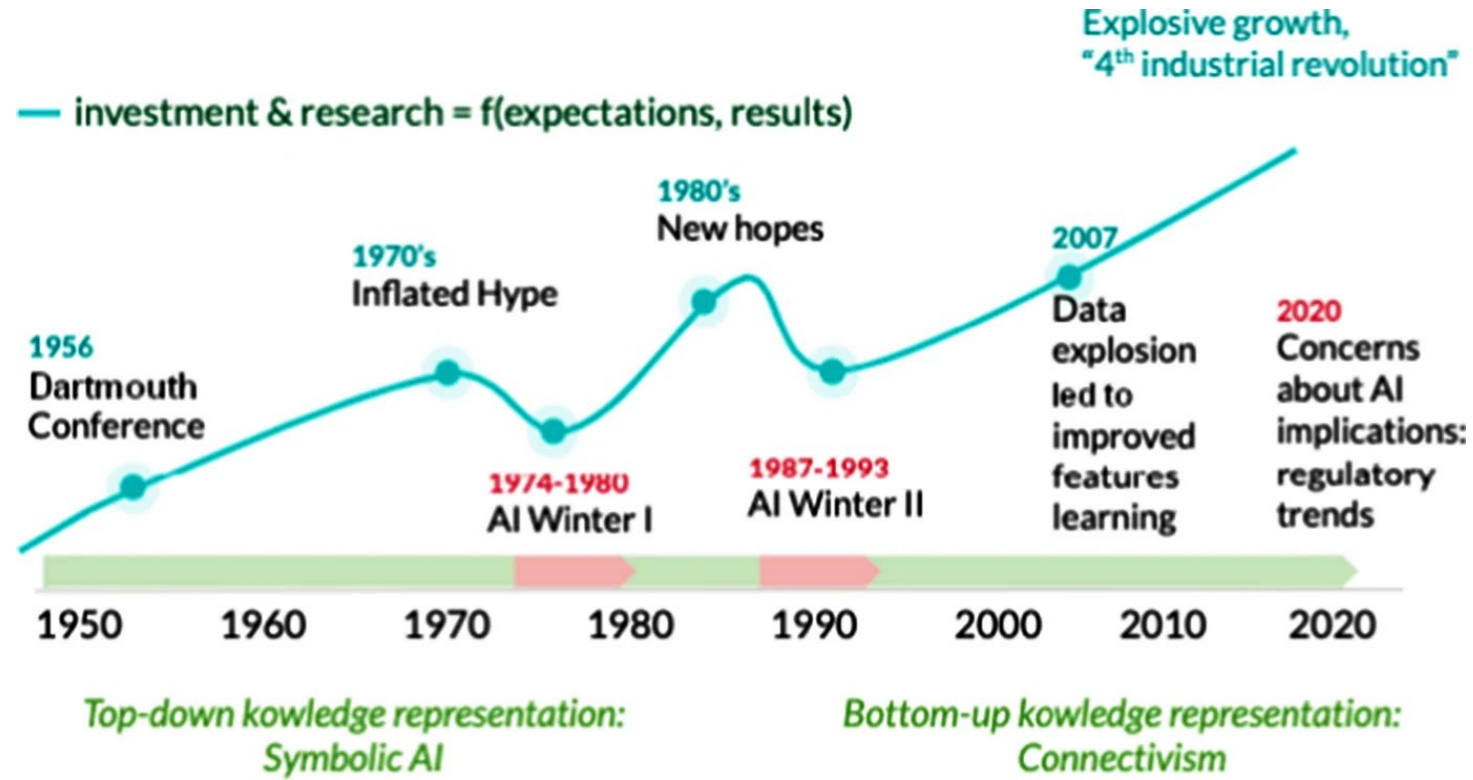
Kas ir mākslīgais intelekts?



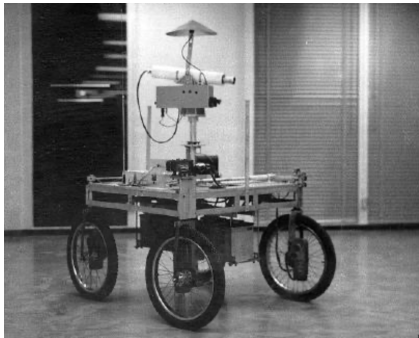
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Vēsture



Hans Moravec's Robots,
1975



Tesla FSD,
2023



Time to Reach 100M Users

Months to get to 100 million global Monthly Active Users



Source: UBS / Yahoo Finance

 @EconomyApp

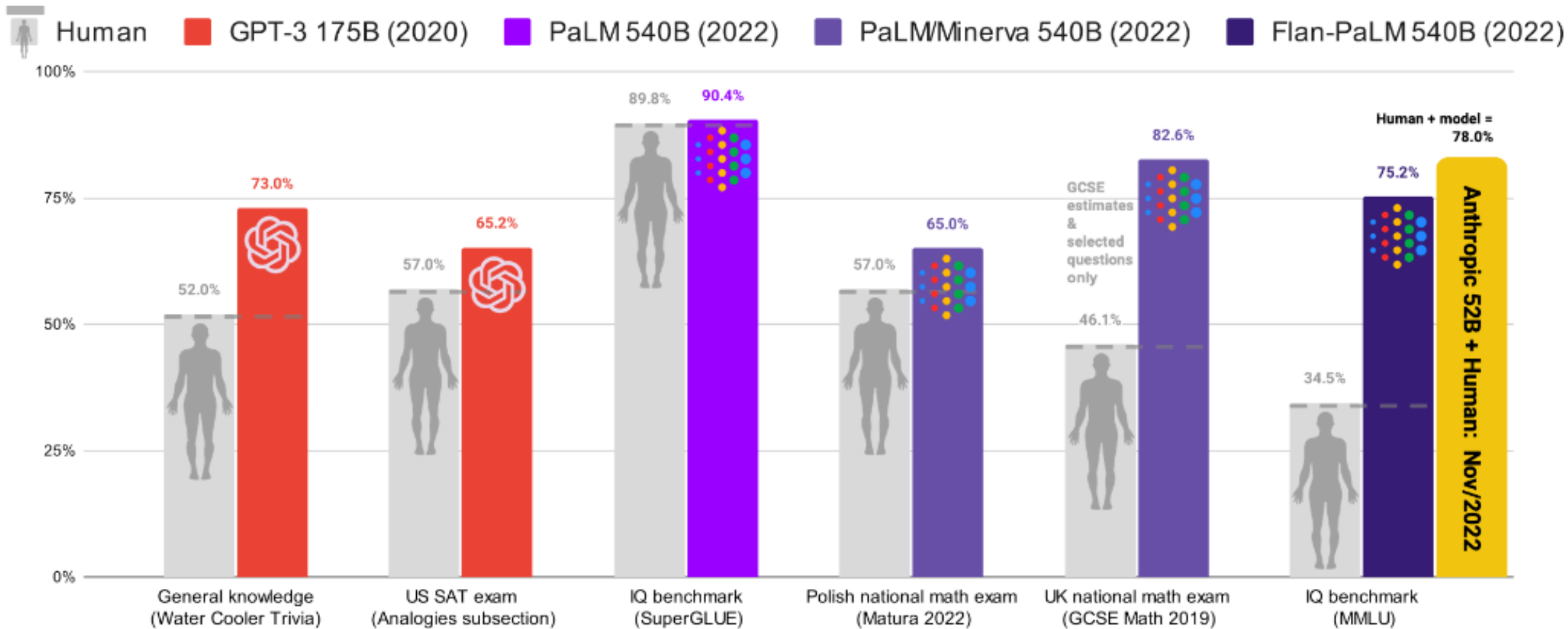
 APP ECONOMY INSIGHTS

ChatGPT valodas modelēšana

The FBI is chasing a criminal on the run .
The FBI is chasing a criminal on the run .
The FBI is chasing a criminal on the run .
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- BERT (Google), GPT (OpenAI), 2018
- Transformer architecture
- Parallelizable
- No memory*
- Very large VRAM footprint
- Limited context length
~2048 tokens** (or tradeoffs, 100k)
- CommonCrawl (10 years), 410b tokens

Paceļ vidējo zināšanu līmeni



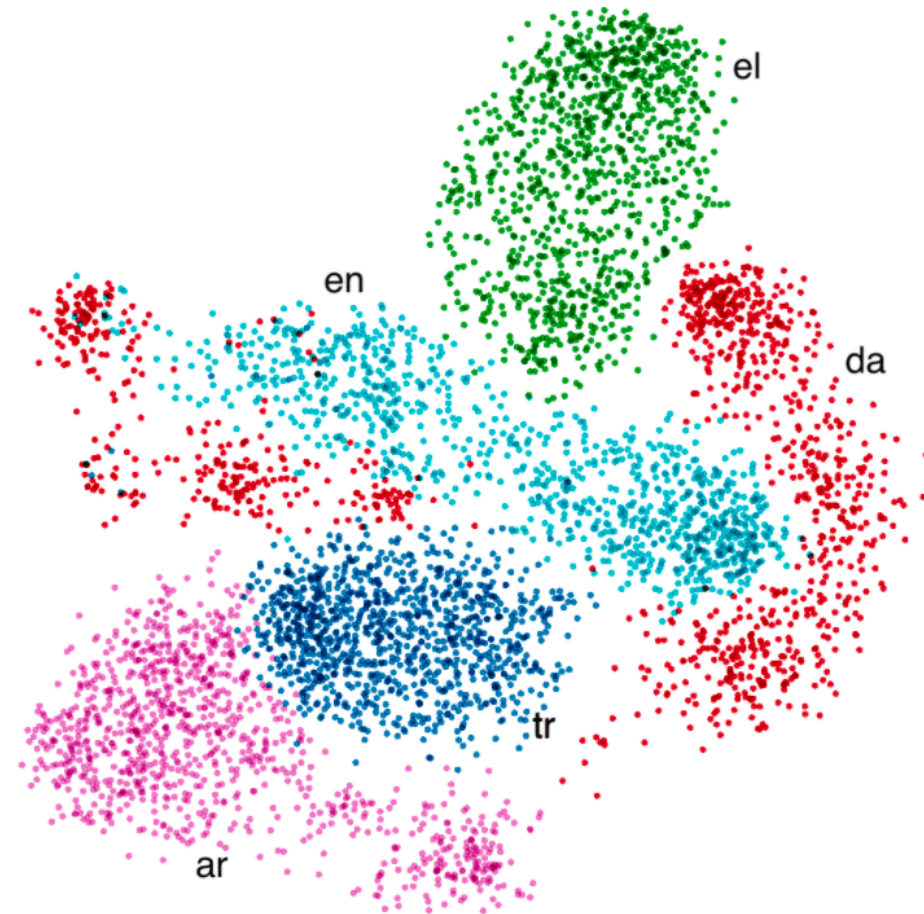
Teksta iegultnes - Text embeddings

“Lion is the king of the jungle.”

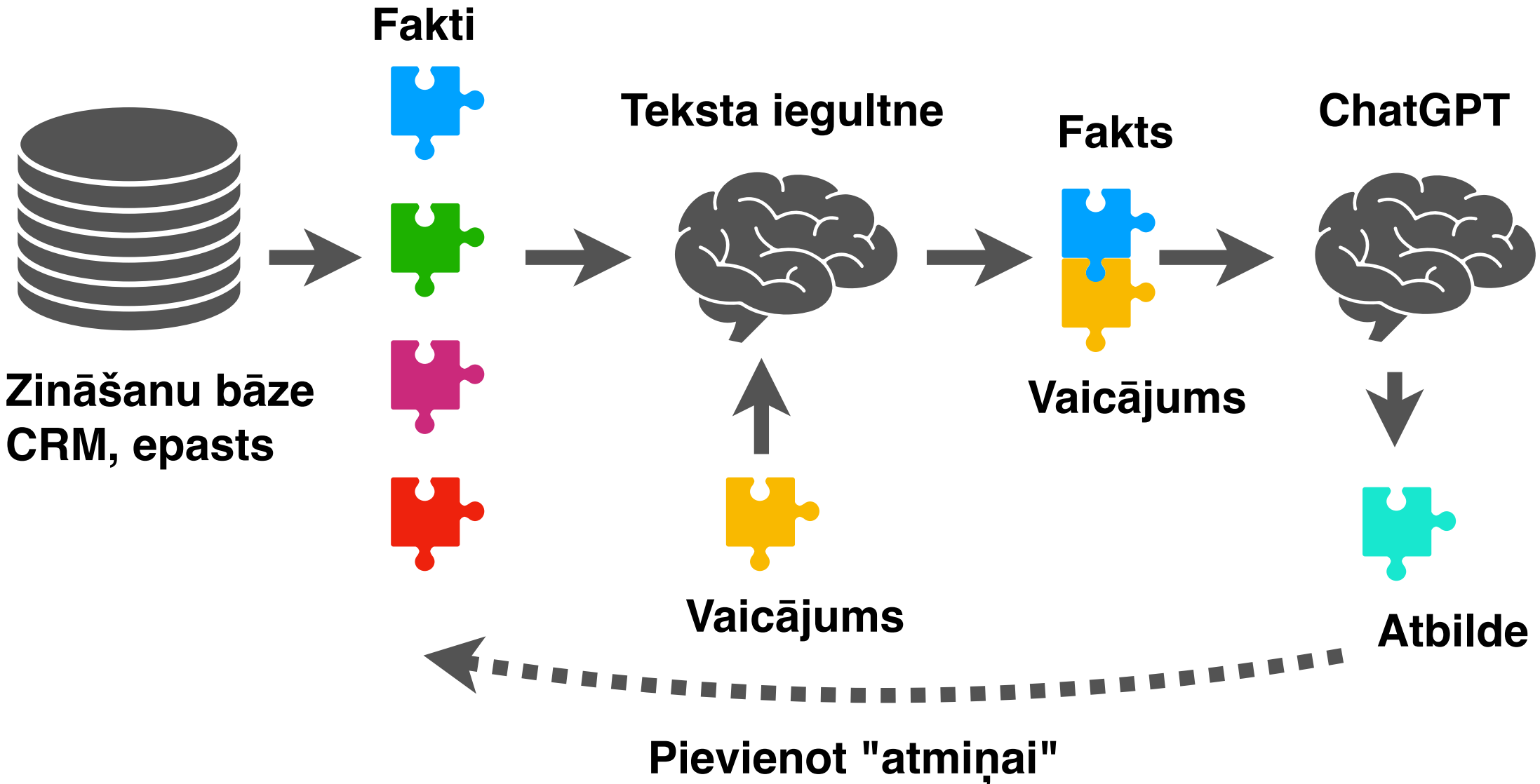


“The tiger hunts in this forest.”

“Everybody loves New York.”

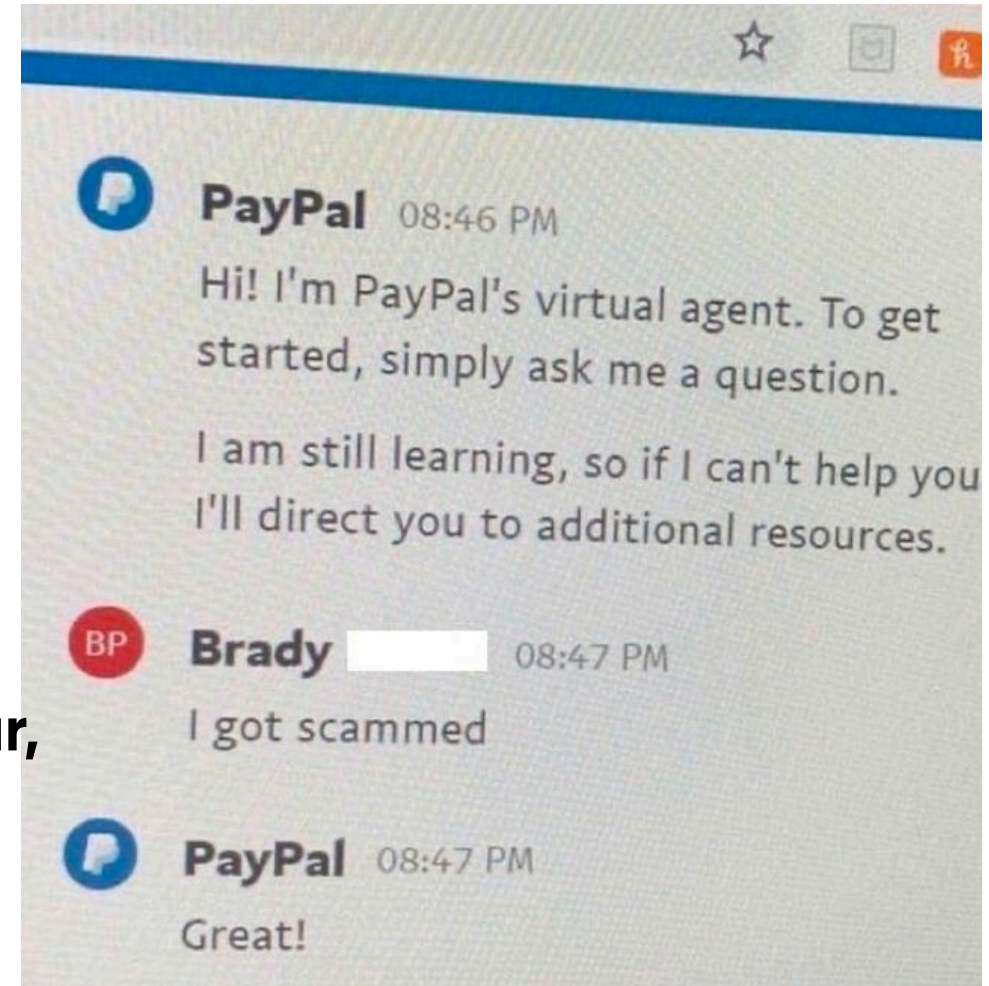


Patiesi gudri čatboti



Potenciālie produkti

1. Čatboti (Client support, Personal tutor, Elderly care)
2. Meklētāji (Your own docs, Email, **Advertisement**)
3. Satura veidošana (UpWork, Amazon, Twitter, Email, Websites, Ideas)
4. Satura personalizēšana (Translation, grammar, style, editing, customization)
5. Datu kopas, klasifikatori
6. Autonomas sistēmas, roboti



Gatavie riki - ChatGPT tipa

Search engines:

- **GPT-4 Beta func.**
- **perplexity.ai**
- **chat.you.com**
- **Google Bard VPN**

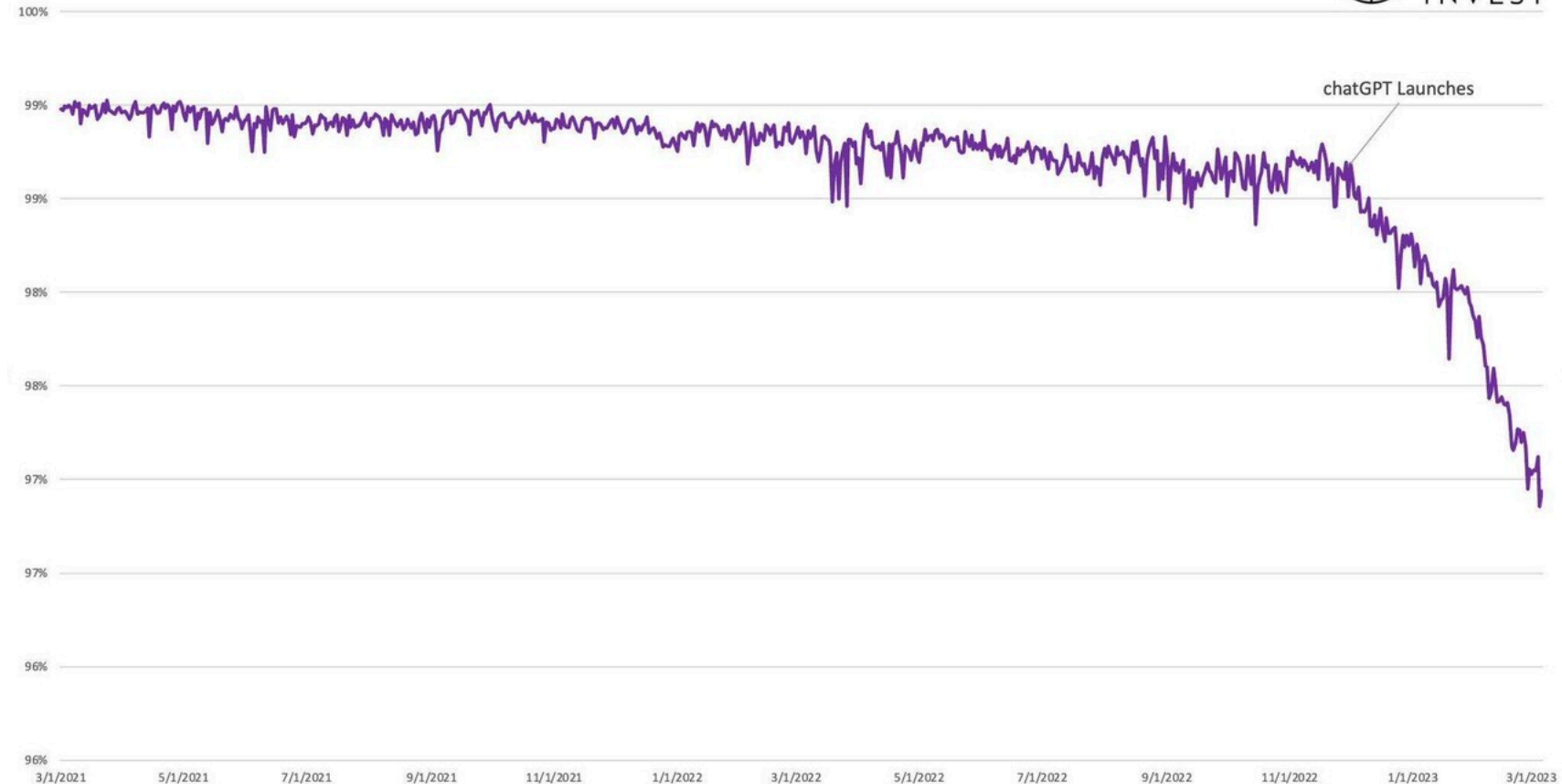
Productivity:

- **chatpdf.com**

Content:

- **jasper.ai**
- **writesonic.ai**
- **chat.openai.com**

Google traffic share vs Bing + chatGPT



Source: ARK Invest, SimilarWeb



KEEP

CALM

THERE IS

AN APP

AI

FOR THAT

theresanaiforthat.com

pitchpatterns.com / asya.ai

Video / Audio zvani



Analysis

01:20 01:42 -00:24

Markers

Agent

Client

Topics

Report issue

Transcript tad arī skatos, ka jūs locītavām esat pasūtījusi.

The screenshot shows a video player interface with a timeline from 01:20 to 01:42. Below the timeline are several rows of activity bars: 'Markers' with a refresh icon, 'Agent' with dark blue bars, 'Client' with light blue bars, and 'Topics' with colored bars (orange, red, blue, yellow, green). A 'Report issue' button is located at the bottom right. The transcript at the bottom reads: 'Transcript tad arī skatos, ka jūs locītavām esat pasūtījusi.'