Mākslīgais intelekts

Pēteris Grabusts

Definīcijas:

- Wiki https://en.wikipedia.org/wiki/Artificial_intelligence
- Britannica: https://www.britannica.com/technology/artificial-intelligence
- IBM: https://www.ibm.com/cloud/learn/what-is-artificial-intelligence
- Nacionālā enciklopēdija: https://enciklopedija.lv/skirklis/24447-m%C4%81ksl%C4%ABgais-intelekts

Avoti:

- Artificial Intelligence: A Modern Approach is a university textbook on artificial intelligence, written by Stuart J. Russell and Peter Norvig. It was first published in 1995 and the fourth edition of the book was released on 28 April 2020. It is used in over 1400 universities worldwide and has been called "the most popular artificial intelligence textbook in the world". It is considered the standard text in the field of artificial intelligence.
- 1st 1995, red cover
- 2nd 2003
- 3rd 2009
- 4th 2020 (The fourth edition to Artificial Intelligence: A Modern Approach focuses more on machine learning, deep learning, probabilistic programming, multiagent systems, and includes sections where the AI's utility function is uncertain, rather than certain)
- https://en.wikipedia.org/wiki/Artificial_Intelligence:_A_Modern_Approach

Russel, Norvig definīcija:

«We call ourselves *Homo sapiens*—an the wise—because our **intelligence** is so important to us. For thousands of years, we have tried to understand *how we think*; that is, how a mere handful of matter can perceive, understand, predict, and manipulate a world far larger and more complicated than itself. The field of **artificial intelligence**, or AI, goes further still: it attempts not just to understand but also to *build* intelligent entities».

Mana definīcija: MI ir algoritmu un rīku kopums noteiktas cilvēciskas darbības imitēšanai.

ARTIFICIAL INTELLIGENCE (AI) TECHNOLOGY LANDSCAPE

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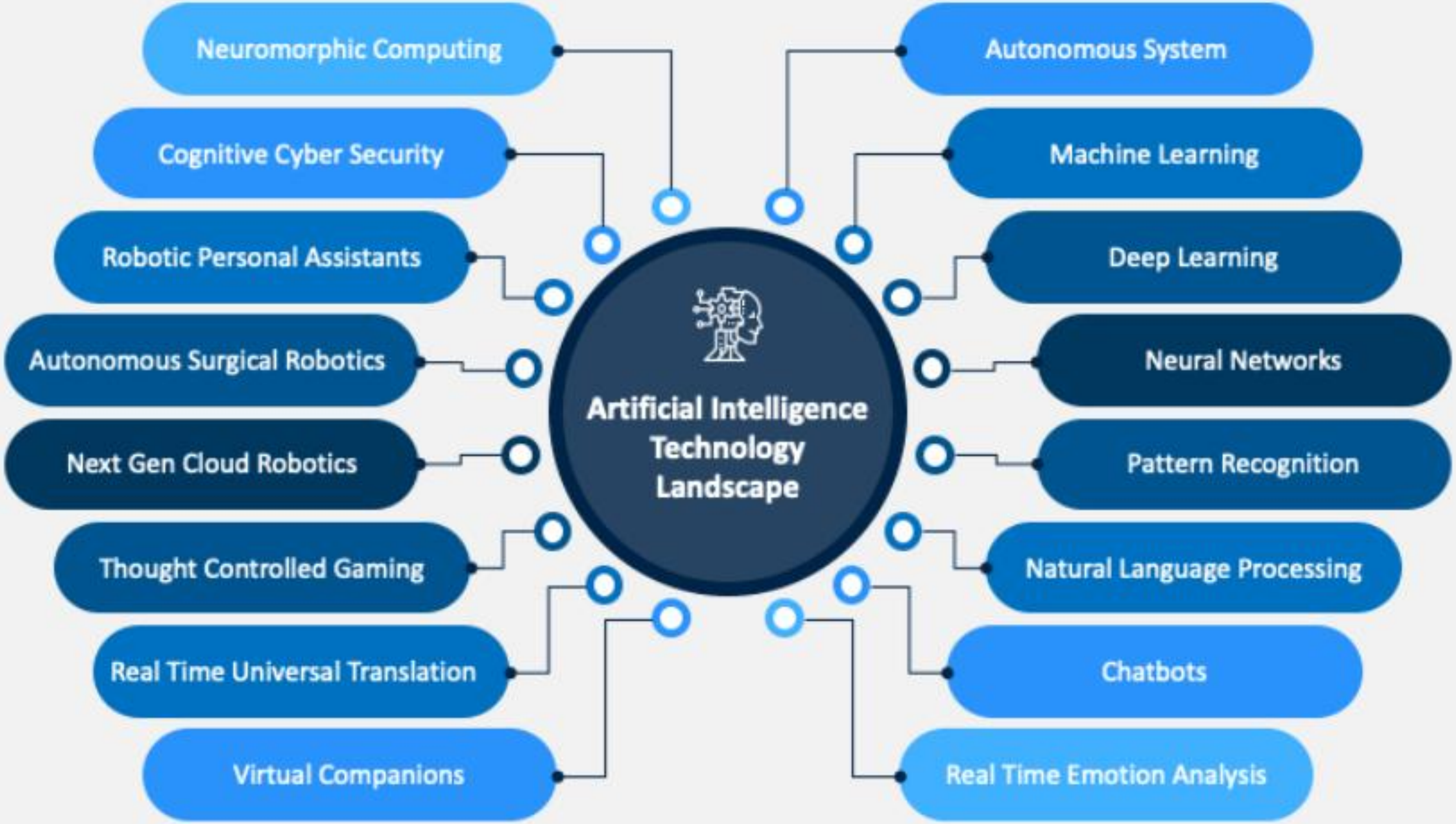


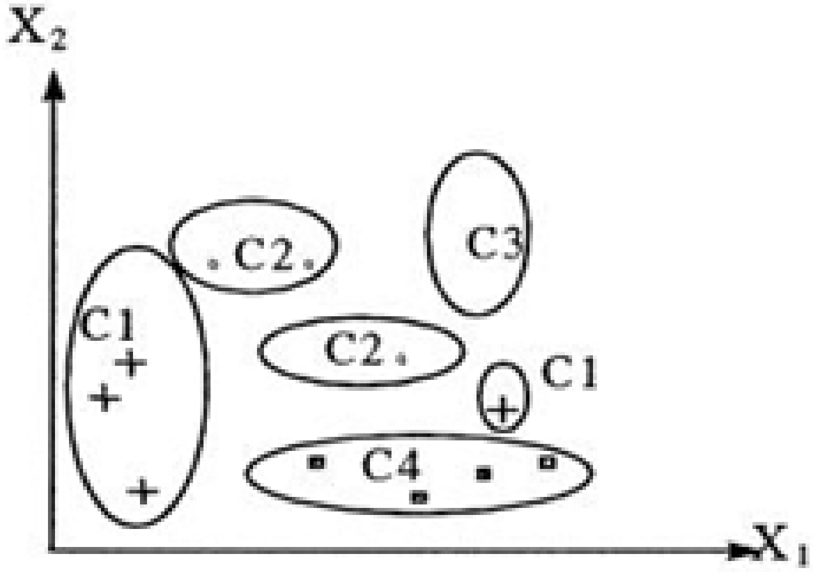
Jaunajiem censoņiem:

MI nav tikai neironu tīkli!

Kozma Prutkovs (c) : «Nevar aptvert neaptveramo»

- Klasterizācija
- Fuzzy loģika
- Ģenētiskie algoritmi
- Nepelnīti aizmirstās ekspertu sistēmas: tagad ontoloģijas
- Klasiskie neironu tīkli
- u.t.t

Klasterizācija



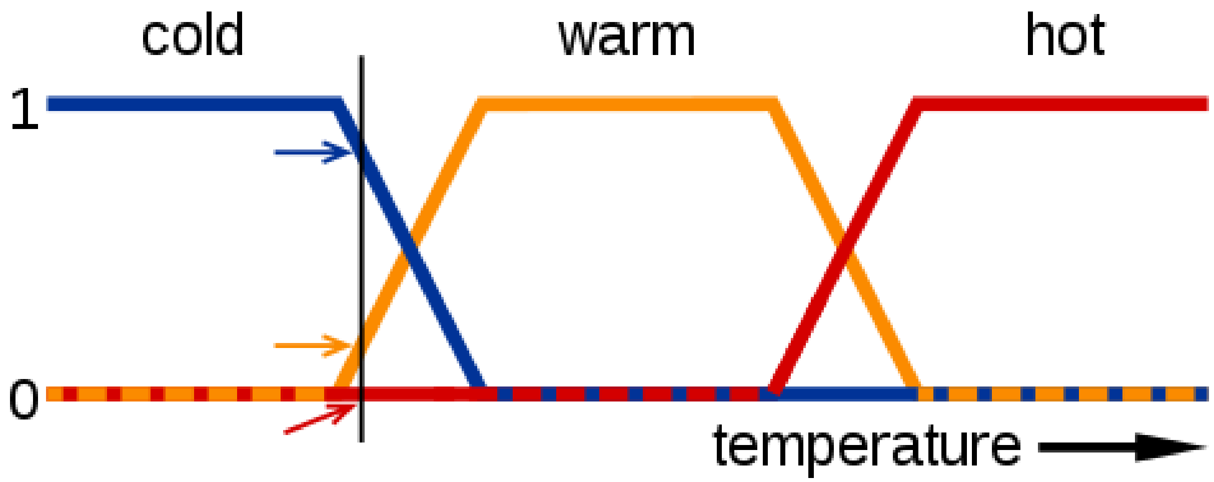
Klasteranalīzes process formāli sastāv no šādiem posmiem:

- analīzei nepieciešamo datu savākšana;
- klašu datu (klasteru) raksturojošo lielumu un robežu noteikšana;
- datu grupēšana klasteros;
- klašu hierarhijas noteikšana un rezultātu analīze.

Fuzzy loģika

Būla loģika: 0 1

Lotfi A. Zadeh



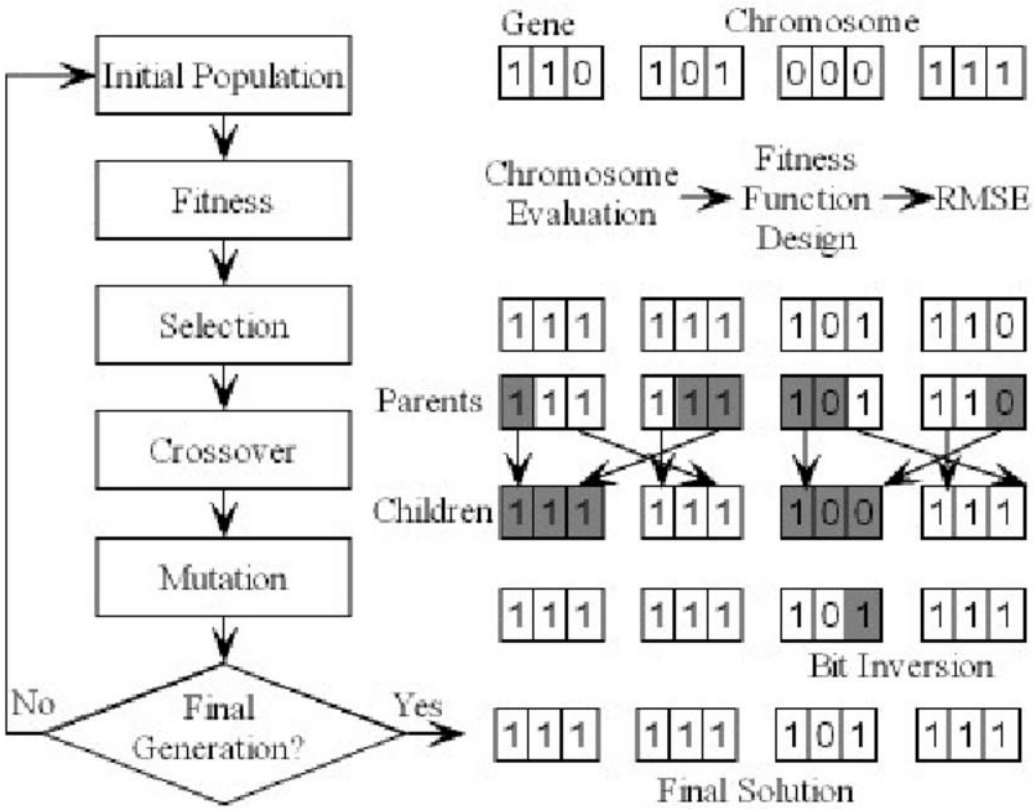
(piederības funkcija)

Ģenētiskie algoritmi

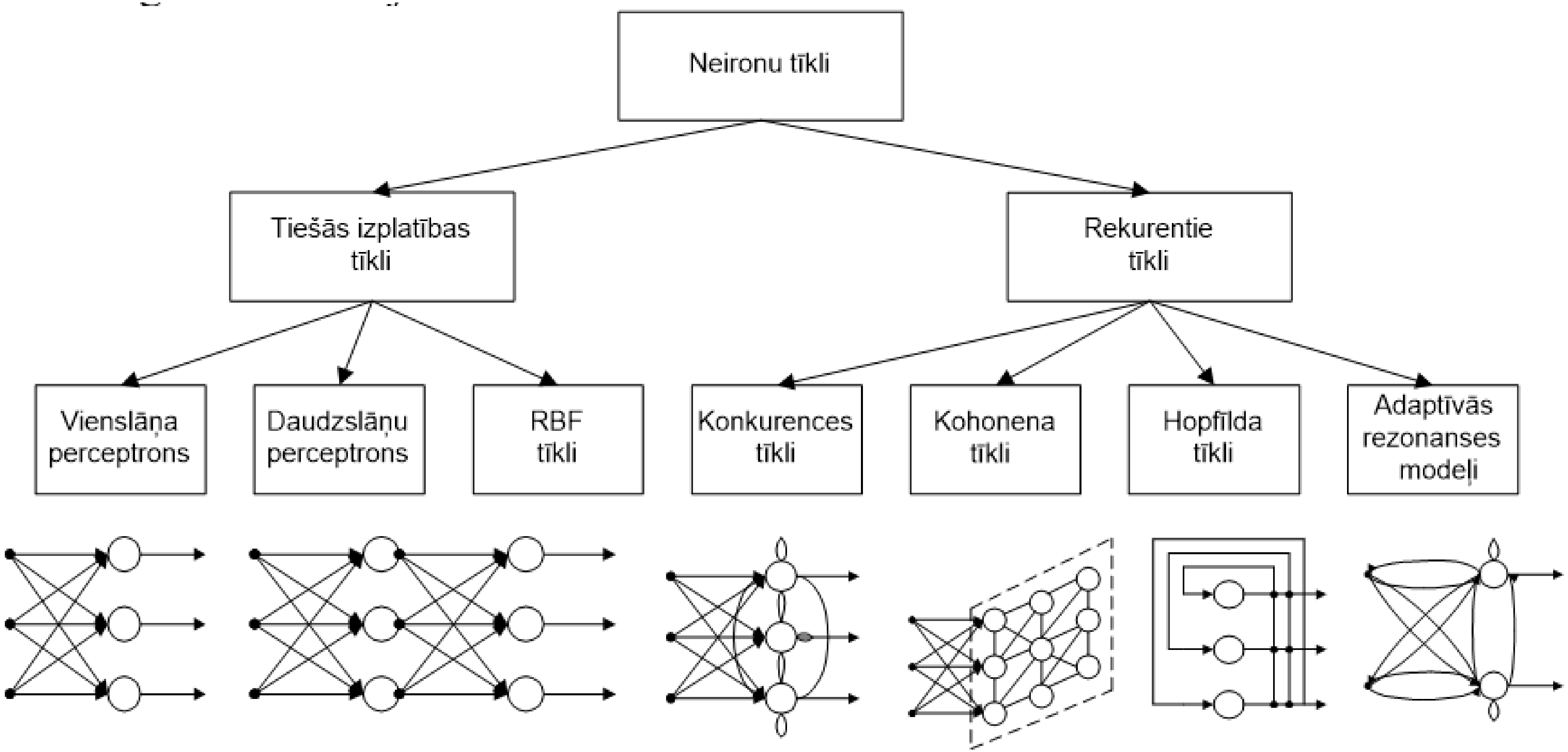
Ģenētiskie algoritmi ir problēmu risināšanas stratēģija, kas balstās uz

bioloģiskās evolūcijas principiem (paaudžu nomaiņa, konkurence starp populācijas indivīdiem) – mutācijas, krustošanās ..,

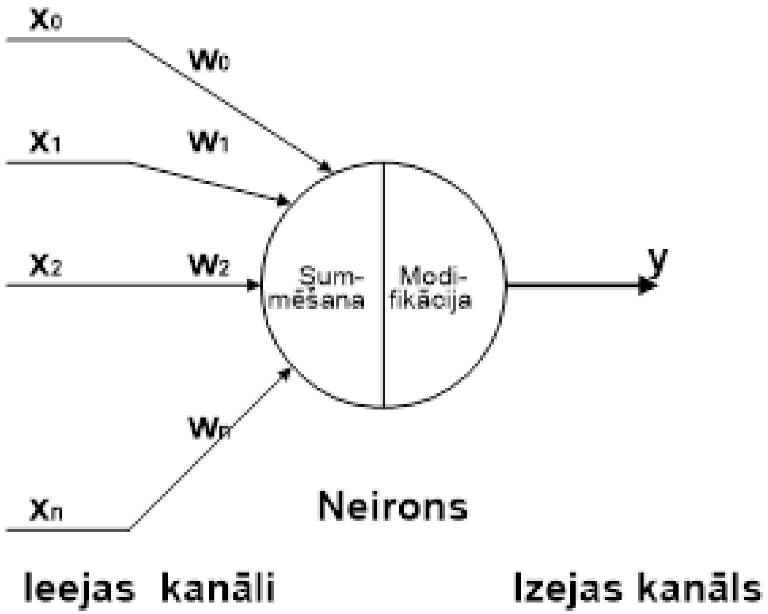
Visu populācijas indivīdu novērtēšana ar derīguma funkciju (fitness function)

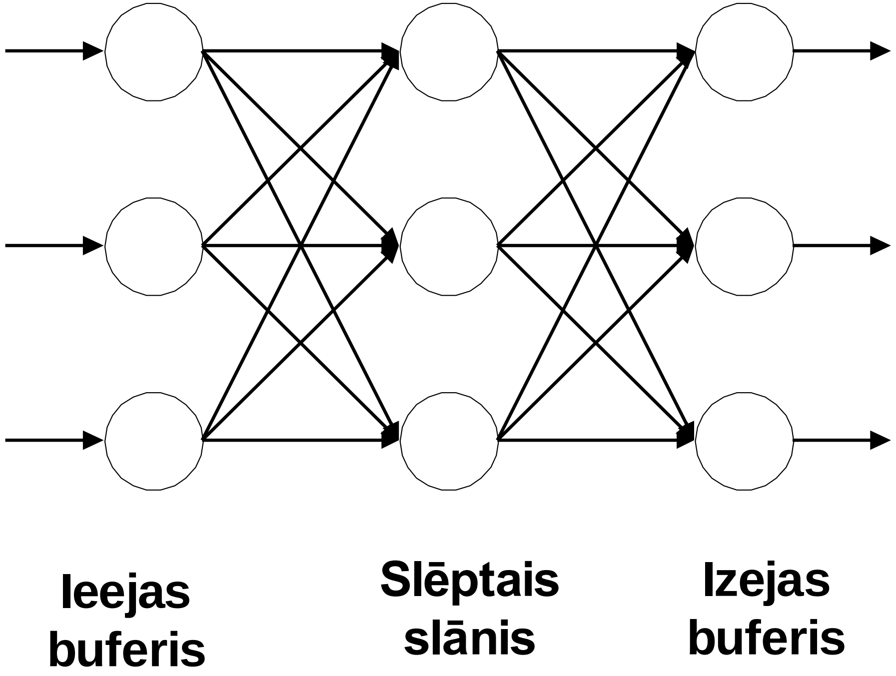


Klasiskie neironu tīkli

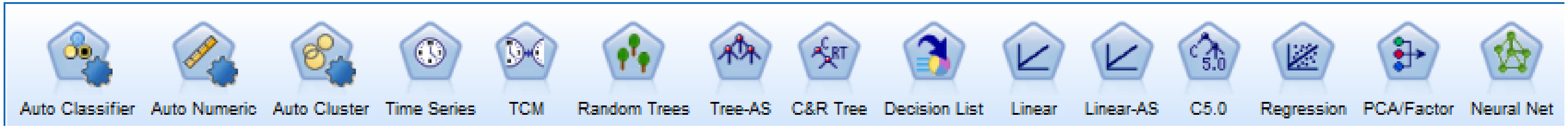


Klasiskie neironu tīkli





IBM SPSS Modeler



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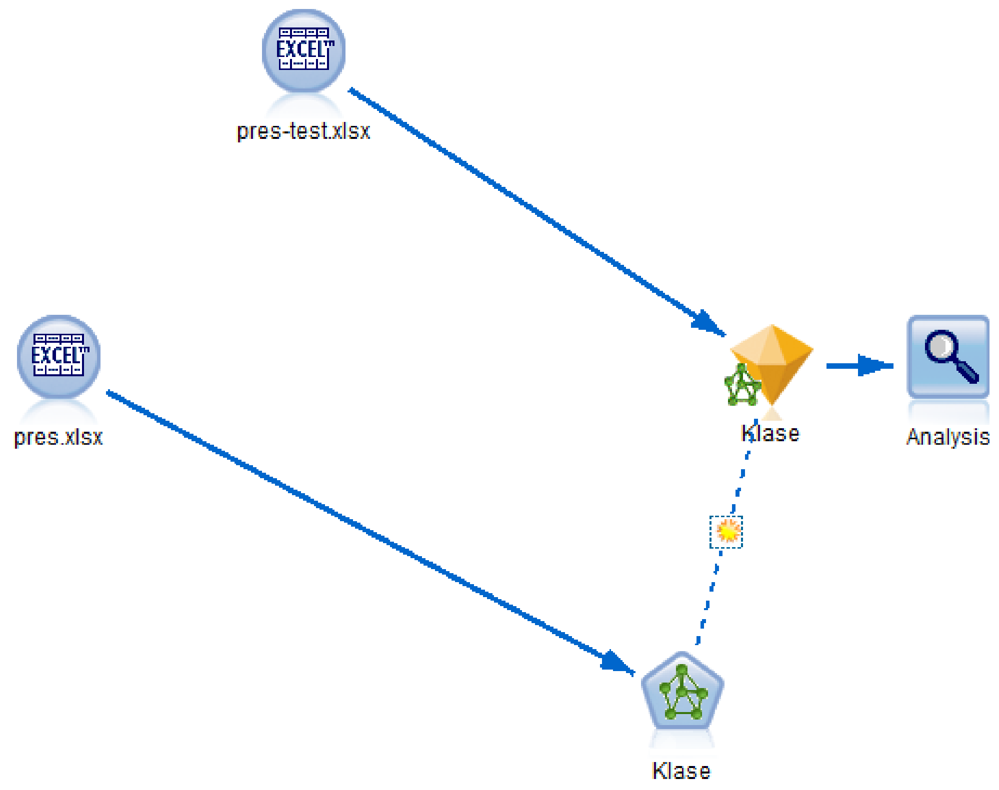
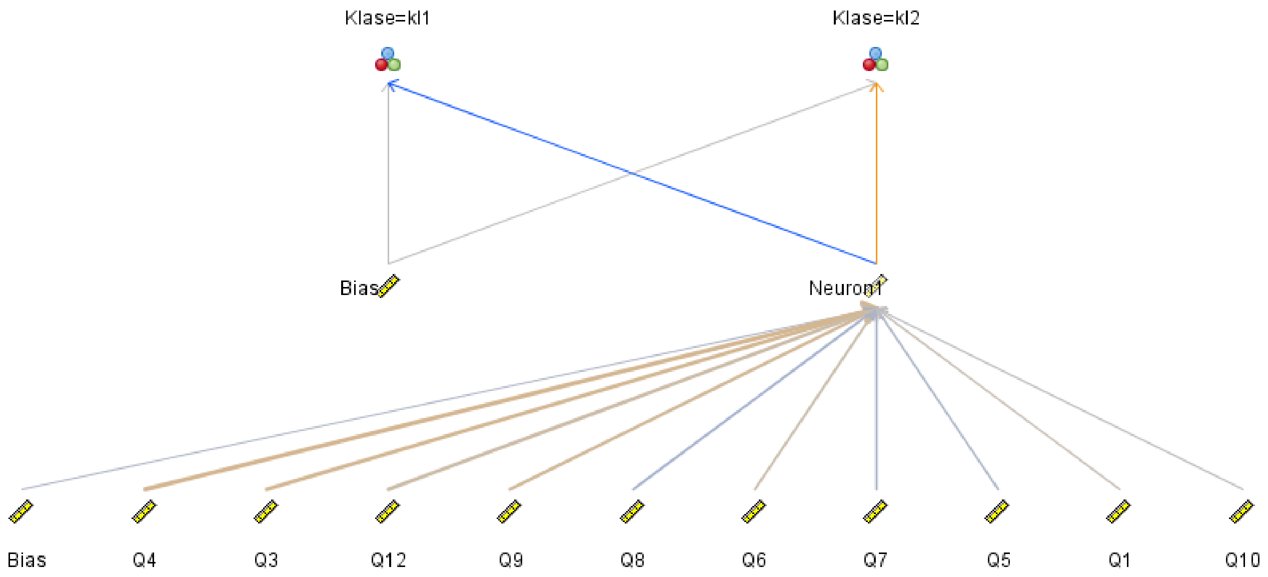
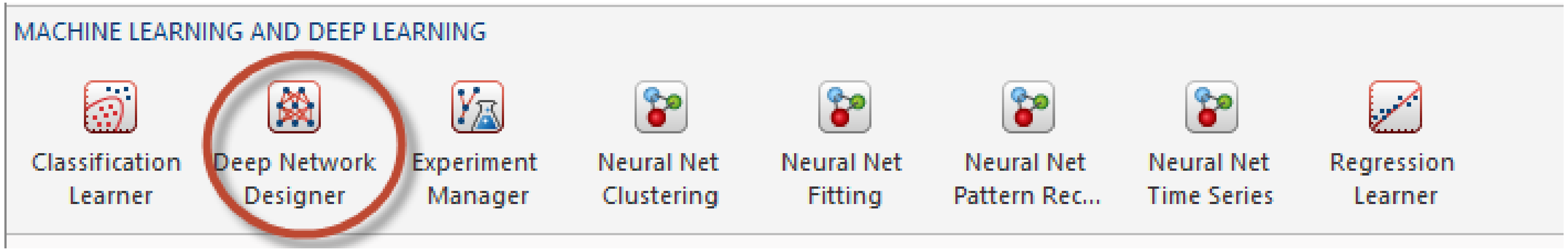




Gads	Klase	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10	Q11	Q12	$N-Klase	$NC-Klase
1992....	kl2	0....	1....	1....	1....	1....	1....	0....	1....	1....	1.0...	0.0...	0.0...	kl2	0.999

Deep learning

- Ar Matlab

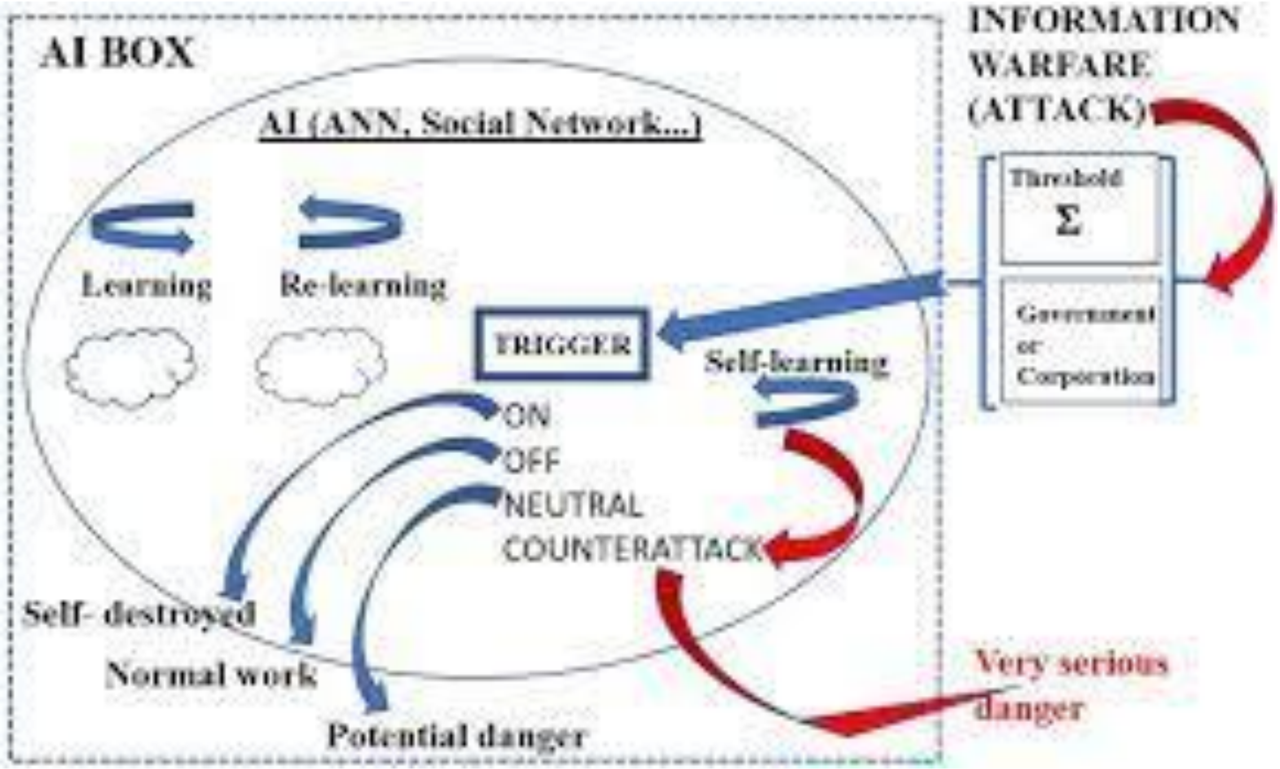


Deep learning

Top Researchers Write 100-Page Report Warning About AI Threat to Humanity

- https://www.vice.com/en/article/a34nm4/ai-report-oxford-malicious-weapons

- AI Box



Perspektīvas:

- Neironu tīkli dominēs visāda veida atpazīšanās, mašīnredzē
- Fuzzy – tehnoloģijās
- Ontoloģijas – tipa «ekspertu» sistēmās

- Pārējās metodes – visticamāk «spēļmantiņu» līmenī (pētījumos u.t.t)

- Kiberkara ar mašīnām nebūs

Secinājumi

- MI pagaidām nav – ir tikai labi algoritmi un framework'i !!!

Singularity; Yampolskiy Roman
https://lv.wikipedia.org/wiki/Tehnolo%C4%A3isk%C4%81_singularit%C4%81te

Nick Bostrom, Superintelligece: Paths, Dangers, Strategies (2014)
Ник Бостром: Искусственный интеллект. Этапы. Угрозы. Стратегии

Artificial intelligence: 'We're like children playing with a bomb'
https://www.theguardian.com/technology/2016/jun/12/nick-bostrom-artificial-intelligence-machine