

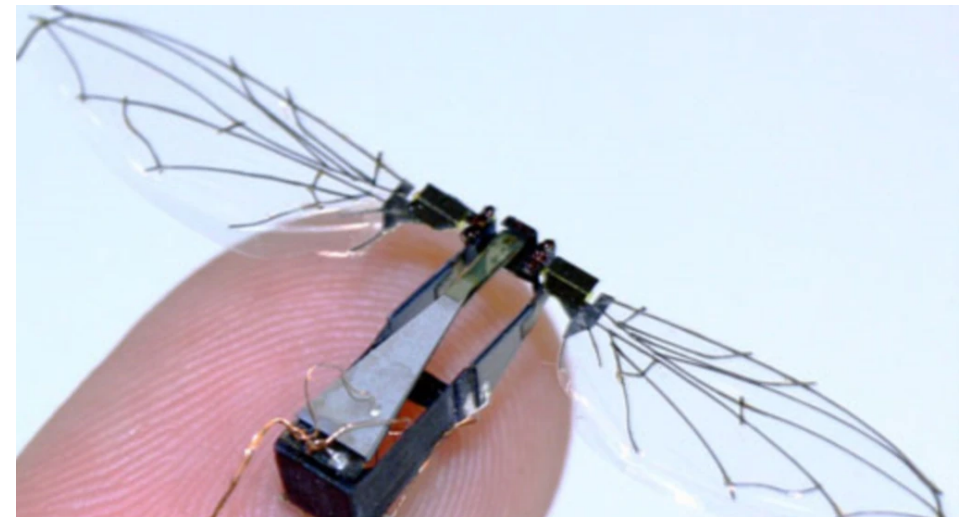
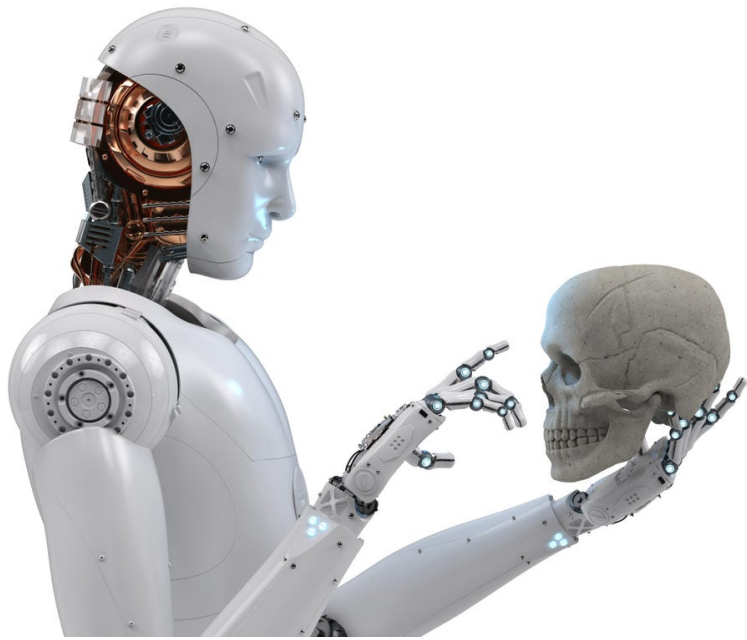
AI in Education: Implementations and Further Perspectives

Alexander Gamkrelidze

I. Javakhishvili Tbilisi State University

Some Introductory Remarks

- What is Artificial Intelligence?



Some Introductory Remarks

- What is Artificial Intelligence?

Artificial Intelligence is...

Some Introductory Remarks

- What is Artificial Intelligence?

Artificial Intelligence is...
Ubiquitous!

Some Introductory Remarks

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Artificial Intelligence is...
Ubiquitous!



Some Introductory Remarks

- What is Artificial Intelligence?

Artificial Intelligence is...

Decision-Making Algorithm
(Software)

Some Introductory Remarks

- Theoretical Results: (Rice's theorem)

There are more **Unsolvable** problems than **Solvable**

Important problems can **NOT** be solved



Some Introductory Remarks

- Theoretical Results: (Rice's theorem)
There are more **Unsolvable** problems than **Solvable**



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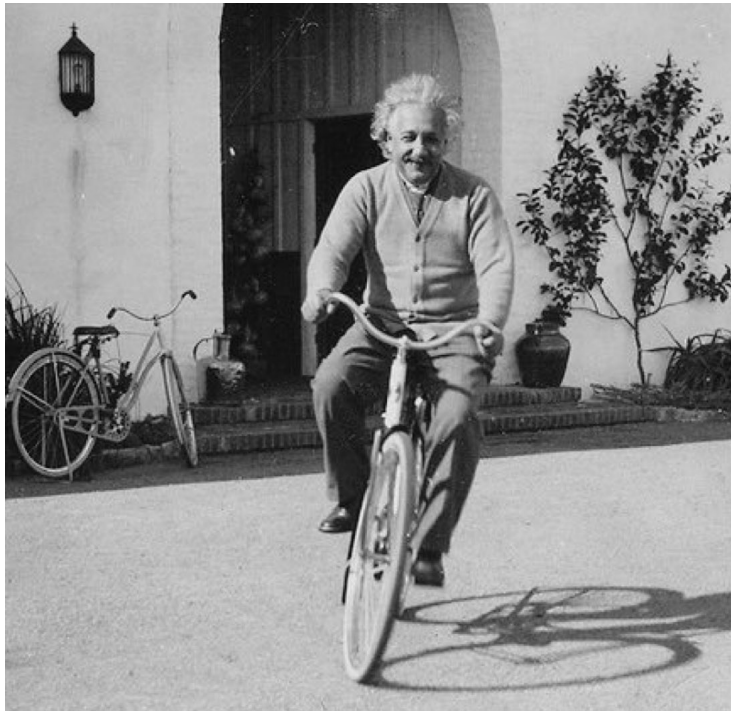
Man muss die Welt nicht verstehen.

Man muss sich darin zurechtfinden

You don't need to understand the world.

You need to find your way in it

(Albert Einstein)



Some Introductory Remarks

- Theoretical Results:

Artificial Intelligence **IS POSSIBLE** up to some **accuracy**
(sufficient for our tasks)

Some Introductory Remarks

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We deal with **Mathematical Models**
(simulating real world with sufficient accuracy)

Some Introductory Remarks

- Theoretical Results:

Artificial Intelligence **IS POSSIBLE** up to some **accuracy**
(sufficient for our tasks)

Open Problem: Can any AI pass a **Turing Test** ?

(building an artificial system that can not be distinguished from a human)

Some Introductory Remarks

- Theoretical Results:

Humans have natural limits (memory, energy, etc.)

We must forget old things to learn new ones (and not to get mad)

Artificial systems (learning systems, neural networks, etc.) have no limits

Some Introductory Remarks

- Theoretical Results:

Humans have natural limits (memory, energy, etc.)

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Result: AI **could** outplay humans (in some sense, with some accuracy)

Some Introductory Remarks

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Good News: It's a long way to go

Some Introductory Remarks

AI **could** outplay humans (in some sense, with some accuracy)

Good News: It's a long way to go

Use AI as an **Aid**, not a main tool

AI already coming to HEIs

However in Baby-steps...



Universities already try to imbed AI

Some Applications

- Teaching, Tutoring
- Administrative work
- Program Rankings (accreditation, QE, etc.)

Some Applications

- Teaching, Tutoring

AI that helps students to improve their knowledge

Main problem: recognize the weaknesses of the students,
improve studying in that direction

Some Applications

- Teaching, Tutoring



Cooperation: Priv. Doz. Helmut Horacek

Deutsches Forschungszentrum für Künstliche Intelligenz

DFKI

Some Applications

- Administrative work

Timetabling Problem

Some Applications

- Administrative work

Timetabling Problem

Merab Chikvinidze, Masters Thesis
School Timetabling

Some Applications

School Timetabling Problem

Merab Chikvinidze, Masters Thesis

მონაცემთა დაყვება - 51 test - STC

კლასები

კლასის ძირითადი ოთახი 308

სულ 30 გაკვეთილი

საგნები	გაკვ. რაოდ.	მასწავლებლები	წევ. რაოდ.	კლ. გაერთიანება	გაერთ. რაოდ.
ქართული	5	კაცია მარინა	0		ოთახი
მათემატიკა	5	სვიტრატე აზა	1		ოთახი
მეზებისმოცოდონება	3	მესხიშვილი ნანი	0		ოთახი
რუსული	4	გიშიაშვილი ირა	0		ოთახი
ინგლისური	3	ლილელიანი ქრისტინე შიკურაძე მაია	0		ოთახი
გეორგია	2	გოჯლა ზინო	0		ოთახი
ისტორია	3	ნადირაძე ლამარა	0		ოთახი
სახვითი ხელოვნება	2	წყევები იათამუზ	0		ოთახი
მუსიკა	1	ბაღაშვილი შორენა	0		ოთახი
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მუდარაშვილი ია ხუბანეიშვილი ალექსანდ					
დაწყებითი კლასები					
ი.ს.ტ.					
ფიზიკა					
ძილი					

საერთო მაჩვენებელი

71%

0:0:7.40

Class	Count	Percentage	Class	Count	Percentage	Class	Count	Percentage	Class	Count	Percentage
7-1	24	14%	7-2	0	100%	7-3	4	100%	7-4	1	100%
7-5	25	85%	7-6	4	100%	7-7	0	100%	8-1	23	14%
8-2	0	100%	8-3	0	100%	8-4	1	100%	8-5	3	100%
8-6	0	100%	8-7	0	100%	9-1	0	100%	9-2	22	100%
9-3	18	44%	9-4	0	100%	9-5	20	26%	9-6	5	0%
10-1	0	100%	10-2	28	0%	10-3	0	100%	10-4	1	100%
10-5	0	100%	11-1	18	29%	11-2	5	12%	11-3	18	29%
11-4	1	29%	11-5	0	100%	12-1	19	15%	12-2	2	100%
12-3	21	19%	12-4	0	100%	12-5	66	100%			

შეცდომის მიზეზითა ჩამონათვალი

0:0:7.40

დამატებითი ინსტრუქციები

Some Applications

- Administrative work

Timetabling Problem

Ongoing work: Exam Timetabling (TSU Examination Center)

AI Challenge

Main Problem: Decision-making

AI Challenge

Main Problem: Decision-making

A Group at TSU: Prof. Gia Sirbiladze

Decision-making Systems based on Fuzzy Logic

AI Challenge

A Group at TSU: Prof. Gia Sirbiladze



AI Challenge

Bachelor Curriculum Ranking










Engineering Applications of Artificial Intelligence

Volume 123, Part A, August 2023, 106278



Possibilistic simulation based interactive fuzzy MAGDM under discrimination q-rung picture linguistic information. Application in educational programs efficiency evaluation

[Gia Sirbiladze](#)^a  , [Janusz Kacprzyk](#)^b , [Bidzina Midodashvili](#)^a ,
[Manana Khachidze](#)^a , [Levan Midodashvili](#)^c , [Irakly Parshutkin](#)^a 

Open Problems

- Professional development of authorisation and accreditation experts
- development of training platforms and assessment systems
- QA procedures explained - providing detailed answers to standard scenarios
- Thematic analysis - AI integrated in data analysis to identify major trends in QA procedures
- Identifying formal compatibility of documents and self-assessment report while initial stage of document submission

Impact on Teaching and Administrative work

- AI Teaching assistants: More effective self-study work;
- Helping students to individually improve weaker sides;
- Efficient administrative work in large universities.



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