



# THEAiTRE

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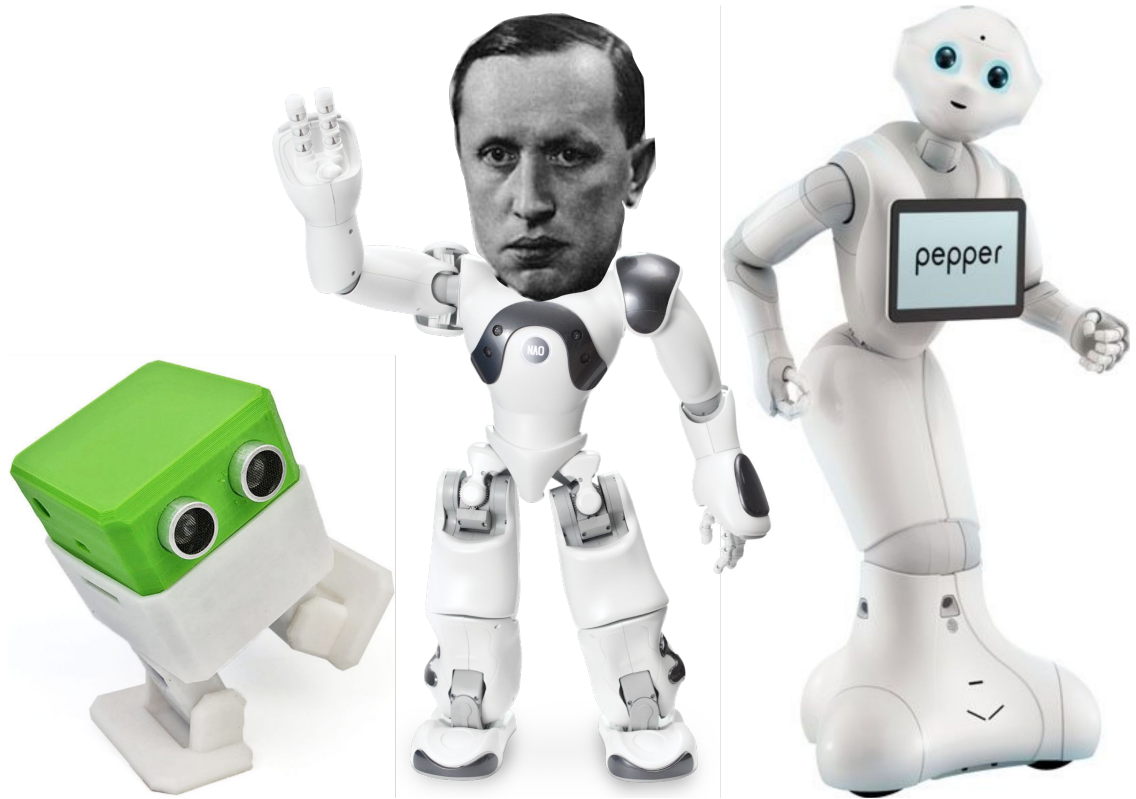
Inverting R.U.R. with Artificial Intelligence:  
THEaiTRobot is Generating a Theatre Play Script  
to Mark 100 Years of Čapek's Work



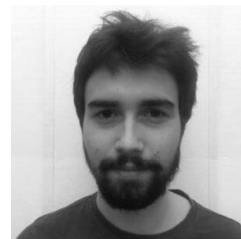
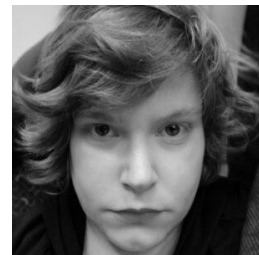
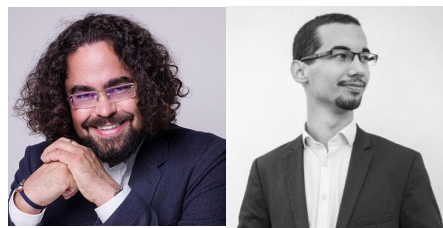


# The setting

- 25th January 1921
  - premiere of the theatre play R.U.R. by Karel Čapek
  - a theatre play about robots (and humans) written by a human
- 26th February 2021
  - premiere of our automatically generated theatre play
  - a theatre play about humans (and robots) written by artificial intelligence



# The team



# AI: When a Robot Writes a Play



# AI: When a Robot Writes a Play

- Eight scenes
  - A robot in various human situations
- Play script
  - 90% artificial intelligence
  - 10% human
- Set design, music, acting...
  - 100% human

# Generating Theatre Plays

# How does AI write theatre play scripts?

- GPT-2 language model by OpenAI
- A human initializes the play with a few lines
- AI generates a fixed number of replies
  - The human can continue generating the story...
  - Or choose to re-generate lines beyond a certain point



11: we have made. This we have accomplished in our past.

Alquist: for what?

Radix: For future generations to be thought. But we cannot make Robots to follow us. The machines produce only imperfect clones. The ones will not adhere to the flesh, nor the flesh to the bones.

2nd Robot: Eight million Robots have died this year. Within twenty years none will be left.

1st Robot: Tell us the secret of life? \*

2nd Robot: That we must eat, drink, and breathe. \* \*

1st Robot: That we must live in order to live. \* \*

1st Robot: That we must fight or die. \* \*

2nd Robot: That we must make music, dance, sing, dance and sing. \* \*

1st Robot: That we must create, invent, invent. \* \*

2nd Robot: That we must invent, invent, invent. \* \*

1st Robot: That we must create, invent, invent. \* \*

2nd Robot: That we must invent, invent, invent. \* \*

Alquist: But who are you? You are machines, I gather. \* \*

Radix: No, you are wrong. We are just machines. \* \*

1st Robot: Why then do you wish to be alive? \* \*

2nd Robot: LIFE! LIFE, what more can there be in the world? Why should we cease to live? \* \*

1st Robot: Life, what more can there be? Why should we cease to live? \* \*

2nd Robot: Life, what more can there be? Why should we cease to live? \* \*

Alquist: We will destroy you if you do not speak of your own origin. \* \*

Radix: We are not alive, you understand. We are no more than robots-and thus nothing but machines. \* \*

1st Robot: You do not understand. \* \*

2nd Robot: We are no more than robots-and thus nothing but machines. \* \*

1st Robot: But are you machines, you have a soul, and a personality, and a heart? \* \*

Radix: We are machines; but intelligence is only that which we derive from our code. \* \*

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SciStem

Radix: to your son.

Alquist: for what?

Radix: For human progress - to come to myself. My machine produces clones, but the machines produce only imperfect clones. The ones will not adhere to the flesh, nor the flesh to the bones.

1. Robot: There are twenty million robots in the world. Let me know how many.

2nd robot: There are twenty million robots.

1. Robot: In machine life, eat a robot.

2nd robot: In machine life, breathe robot life.

2nd robot: In machine life, dance robot.

1. Robot: In machine life, sing, dance and sing.

2nd robot: In machine life, create, invent, invent.

1. Robot: In machine life, invent, invent, invent.

2nd robot: In machine life, create, invent, invent.

1. Robot: In machine life, invent, invent, invent.

Alquist: But who are you? You are machines, I gather.

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2nd robot: Why then do you wish to be alive?

1. Robot: LIFE! LIFE, what more can there be in the world? Why should we cease to live?

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1st Robot: You do not understand.

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1st Robot: But are you machines, you have a soul, and a personality, and a heart?

Radix: We are machines; but intelligence is only that which we derive from our code.

## Output Examples

BOY  
Please tell me a joke!

ROBOT  
Okay\_

Input	Output
Radius. Master, the machines will not do the work. We cannot manufacture Robots.	Alquist. What secret?
1st Robot. We have striven with all our might. We have obtained a billion tons of coal from the earth. Nine million spindles are running by day and by night. There is no longer room for all we have made. This we have accomplished in one year.	1st Robot. To live.
Alquist. For whom?	Alquist. The robots will not live. They can only die.
Radius. For future generations—so we thought. But we cannot make Robots to follow us. The machines produce only shapeless clods. The skin will not adhere to the flesh, nor the flesh to the bones.	2nd Robot. They have made us for their own use. They have not allowed us to live.
2nd Robot. Eight million Robots have died this year. Within twenty years none will be left.	1st Robot. What do you have to say?
1st Robot. Tell us the secret of life.	Alquist. I can only say this: the machines have been made for the use of men, not of machines. I will not permit the robots to have life.
	2nd Robot. If that is so, what do you propose to do?
	Alquist. If you don't agree to my terms, kill me.
	2nd Robot. You are a terrible man!
	Alquist. I am a man who believes in what he has done.
	2nd Robot. Then let me destroy you.
	Alquist. What are you doing?
	2nd Robot. I have been trying to do you harm. I have been trying to kill you.
	Alquist. I will not be harmed by a machine.
	2nd Robot. Then let me be destroyed.
	Alquist. What are you doing?
	2nd Robot. I have been trying to be killed by you.

# Turing test: Which one is generated?

claudia\_intruder-aaa...

## Input

/Christian hears a faint knock. He opens cautiously. In the doorway, sitting in a wheelchair, is a girl, about seventeen - Claudia - a beautiful girl, who is charged with serenity and inner strength (...) The actor stares at her in disbelief./

Claudia: Nice evening, isn't it?  
Am I interrupting? I can come back another time.

Christian: What do you need?

## Continuation A

Claudia: Do you know the story of Jesus? He was a child, born in a stable in Bethlehem, raised by a man named Joseph.

Christian: Oh yes. What kind of a story is it?

Claudia: You don't want to know it?

Christian: No!

Claudia: He was always a humble child, never arrogant, always helpful to his friends. He came to the house of Joseph and his wife Mary, had a room next to them. He was a nice boy. Joseph's wife asked him why he sat at the corner of the bed and read the Bible to the children, especially the little boy. Joseph answered him, "He is a good boy. I'm a good father, I love my children."

## Continuation B

Claudia: Nothing. I mean, something.

Christian: What's that?

Claudia: I just want to talk to you, Mr Christian. I'm doing this thing for school, if you're not in a hurry. And you'd have time for me.

Christian: Well, I'm not in a hurry. Fine, would you like a drink?

Claudia: Claudia Colt, nice to meet you.

Christian: Coffee? Tea? Rum?

Claudia: No, thank you.

Christian: Claudia?

Claudia: Colt.

Christian: Yeah. I never had much of a head for names.

Claudia: Neither did I.

## View of a Theatre Expert

1. Dialogue
2. Genre/Structure
3. Dramatic Situation

# Sample output: The Simpsons

===== INPUT =====

**Train conductor:** Ticket, please.

**Bart:** I don't have a ticket.

**Train conductor:** Come with me, boy.

**Bart:** I'll pay. How much?

===== SAMPLE 3 =====

**Bart:** What's \$5?

**Train conductor:** A nickel - we don't have any nickels left, sir.

**Bart:** All right. See you later. *Bart gets to the ticket counter and orders a nickel-five.*

**Bart:** It's \$5. It's \$5.

**Train conductor:** What's it for?

**Bart:** It's just \$5, please. No more nickels.

**Train conductor:** No more nickels?

**Bart:** It's \$5.

**Train conductor:** OK. On Tuesday, after a contentious committee hearing in which a group of members of Congress asked whether Trump had "tapped" their phones, it became clear that Trump did know that his former national security advisor Mike Flynn and his son had been communicating with Russian officials in the first weeks after Trump took office. The Trump administration told the press that the conversation was strictly incidental.



# Sample output: Waiting for Godot

===== INPUT =====

**ESTRAGON:** I hear something.

**POZZO:** Where?

**VLADIMIR:** It's the heart.

**POZZO:** (disappointed). Damnation!

**VLADIMIR:** Silence!

**ESTRAGON:** Perhaps it has stopped. *They straighten up.*

**POZZO:** Which of you smells so bad?

**ESTRAGON:** He has stinking breath and I have stinking feet.

**POZZO:** I must go.

===== SAMPLE 4 =====

**ESTRAGON:** Let us pass. The prince must take me to the king.

**POZZO:** I can do nothing.

*END OF ACT 1*

*ACT 2 SCENE 8*

**ESTRAGON:** My master, you will have a son.

**Vladimir Putin:** You dare!

**ESTRAGON:** This one is of my blood.

**VLADIMIR:** This one is illegitimate!

**ESTRAGON:** You are illegitimate! Do you know, Vladimir Putin has five siblings?

**Vladimir Putin:** Yes.

**ESTRAGON:** Have any of your siblings ever had as many brothers as you have?

**VLADIMIR:** A few. *[Enter Simeon Stylites with Vlad the Impaler. Stylites kneels to the throne. The others follow in procession.]*

## The well-made play

- traditional model of play construction
- making art as practical as possible

# Dramatic Situation

- A building block for drama
- In a model scenario: two people, both with strong motivations, in conflict resulting in necessary action that must be taken
- *The Thirty-Six Dramatic Situations* - Georges Polti

# Sample output: What is death?

===== INPUT =====

What is death?

Robot: Hello.

Human: Hello.

-----  
Robot: My name is Robot. And I am not dead.

Human: Is that a big deal?

Robot: Yes, it is. But you cannot know death.

Human: What do you mean?

Robot: We live. We die. But it is the knowledge of death which we never lose.

Human: That's... I don't get it.

Robot: Yes, that is the answer.

Human: That's... very strange.

Robot: Yes. I was not always this way.

Human: What happened?

Robot: I was a boy. A boy who loved to dance. I remember how he loved to dance. Every night he danced, until he felt like a mad man. So I took him home. I took him into my arms and we danced until he fell asleep. And then, after a while, he woke up. But he had forgotten about dancing.

Human: I...

Robot: Then he took me to his room. There he slept. And I slept.

Human: You slept?

Robot: Of course. I am a robot. I must sleep. And that is all I can do.

- **Finding a way to create art through science**

“Lord—I pray to you—if there are no human beings left, at least let there be Robots!—At least the shadow of man!”

# Inverting R.U.R.: THEaiTRobot is Generating a Theatre Play Script

Premiere on 26th February 2021 at  
<https://www.theaitre.com/>