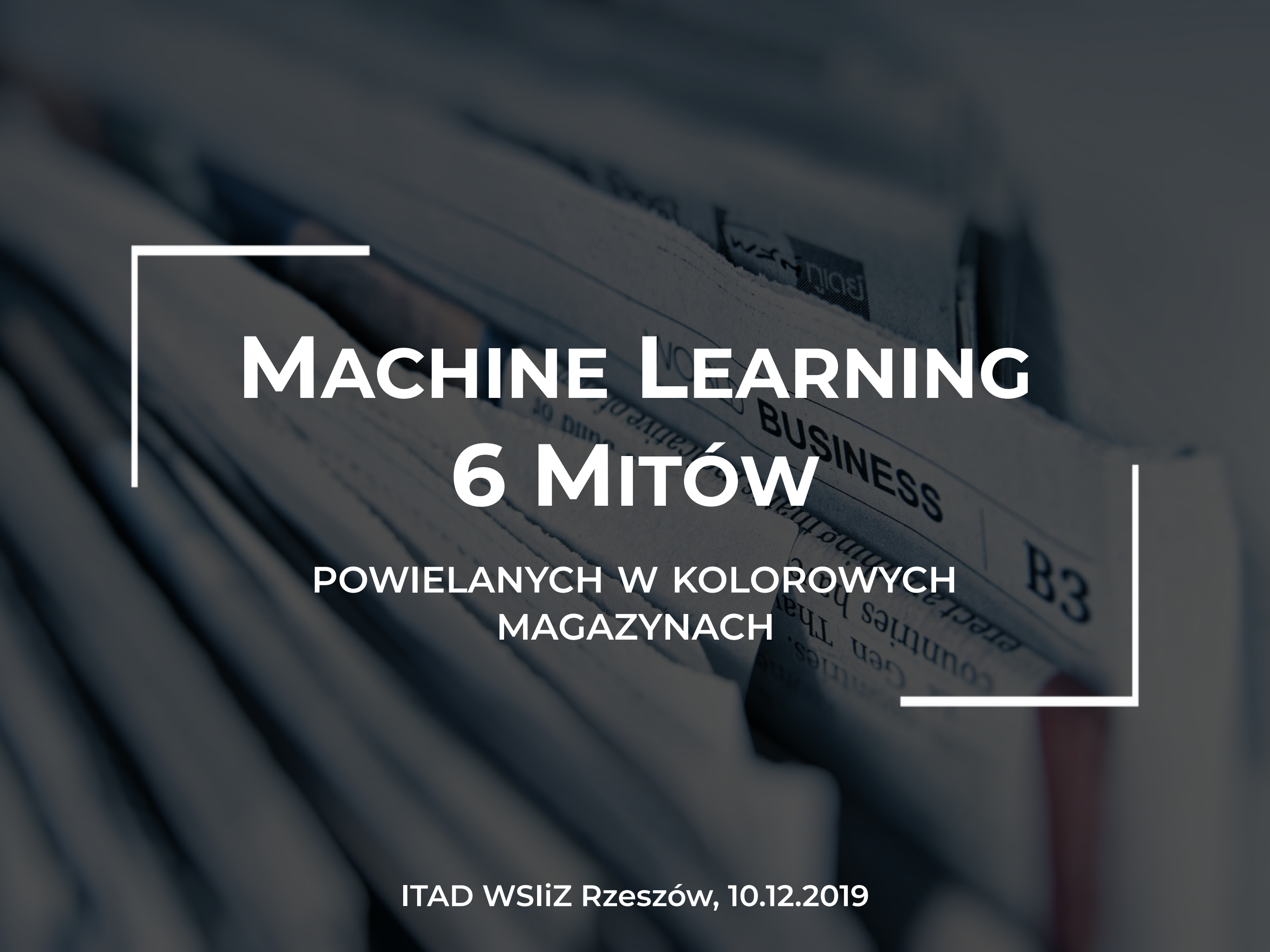




# MACHINE LEARNING 6 MITÓW

POWIELANYCH W KOŁOROWYCH  
MAGAZYNACH

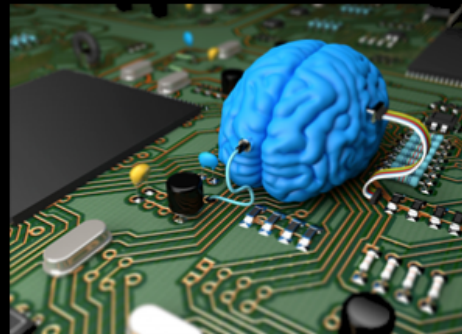
ITAD WSliZ Rzeszów, 10.12.2019

# ○ prowadzącym

## Deep Learning



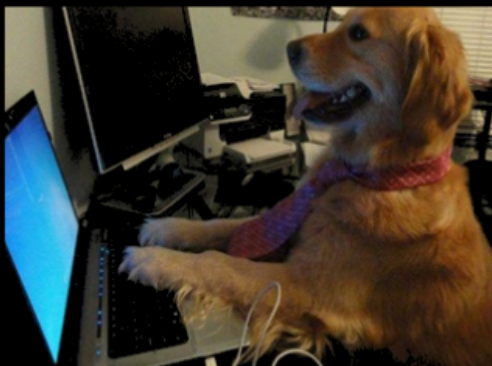
What society thinks I do



What my friends think I do



What other computer scientists think I do



What mathematicians think I do



What I think I do

```
In [1]:  
import keras  
Using TensorFlow backend.
```

What I actually do



# ○ prowadzącym

## Konrad Łyda

Machine Learning Engineer  
@ Asseco **Business Solutions**

**UczymyMaszyny.pl**

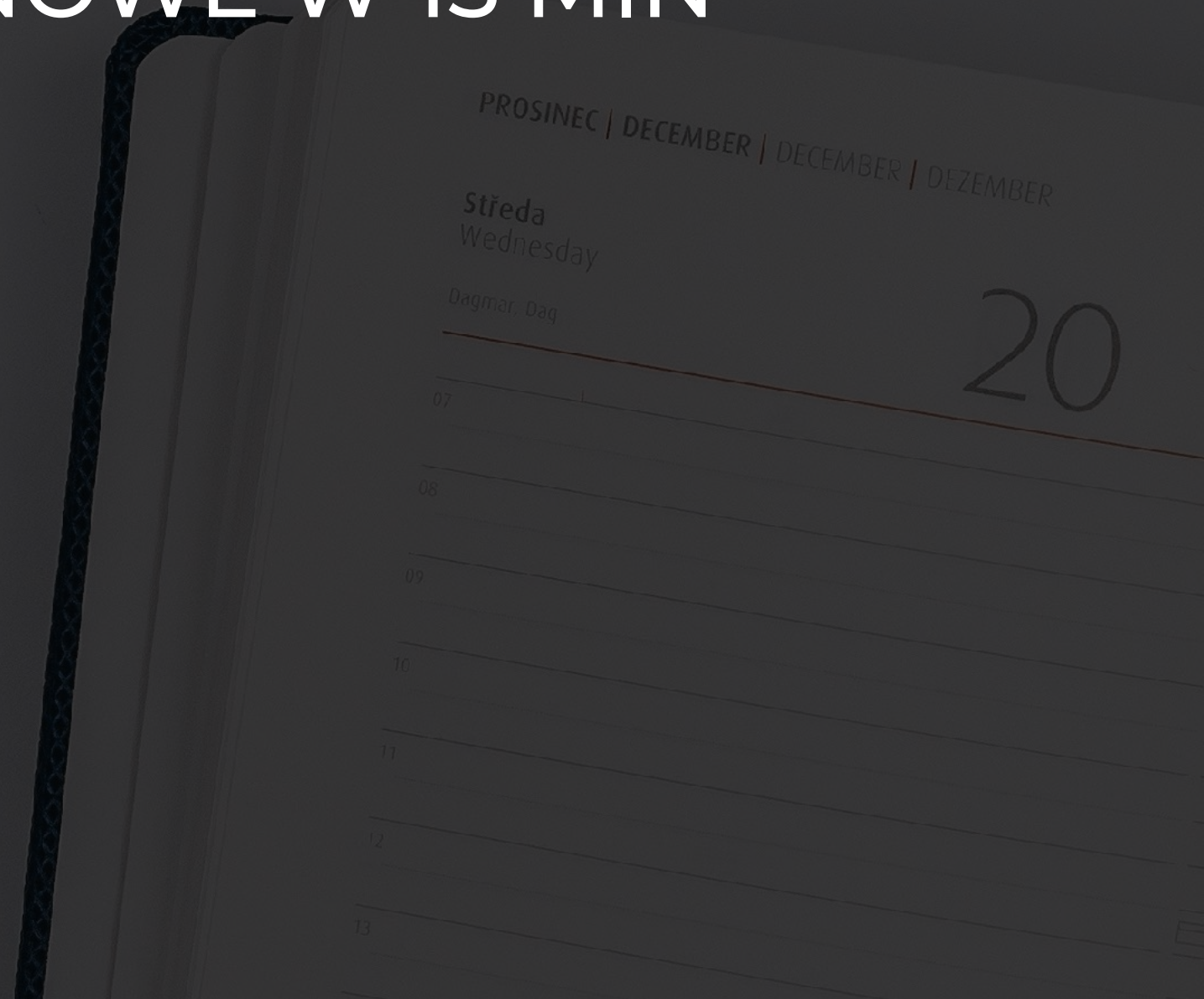
konrad@uczymymaszyny.pl

🐦 @k\_\_lyda



# Agenda

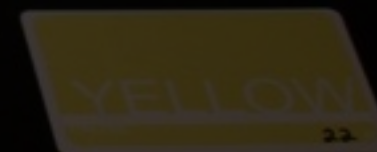
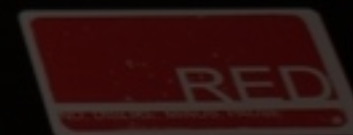
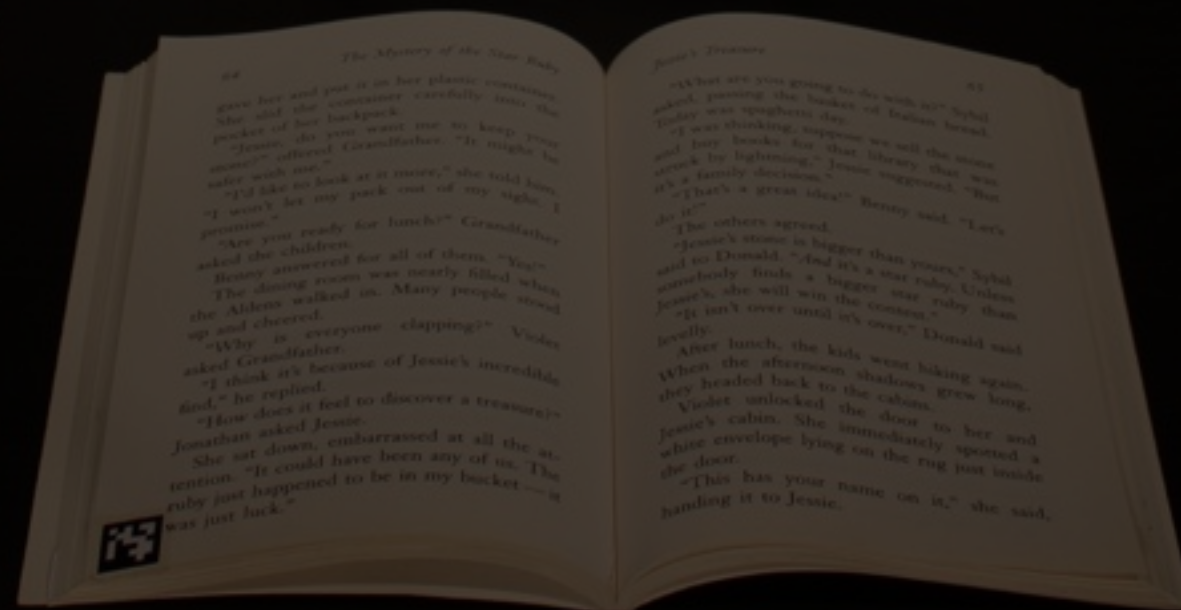
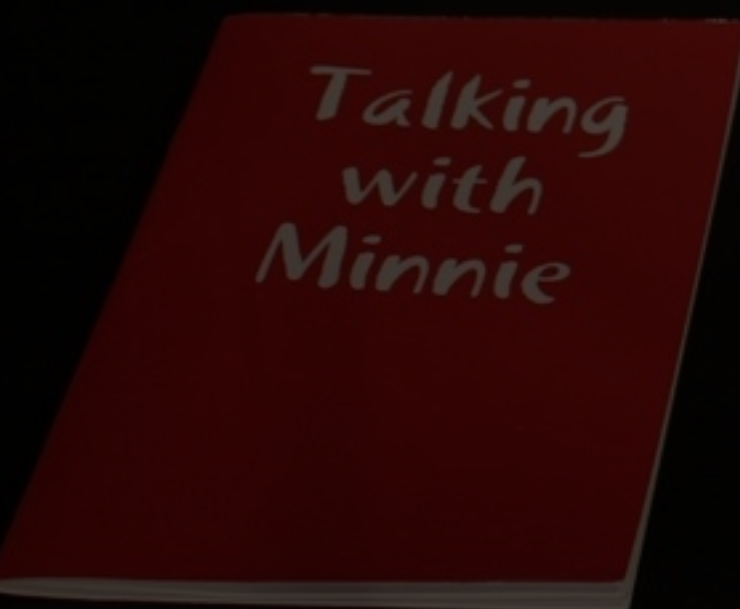
- UCZENIE MASZYNOWE W 15 MIN
- DEMO
- MITY
- COŚ NA WYNOS







# Machine Learning w 15 min.



# Machine Learning w 15 min.

Program komputerowy uczy się z  
**doświadczenia E** (Experience)

*Tom Mitchell, 1997*

# Machine Learning w 15 min.

Program komputerowy uczy się z  
**doświadczenia E** (Experience) w  
kontekście pewnego **zadania T** (Task)

*Tom Mitchell, 1997*

# Machine Learning w 15 min.

Program komputerowy uczy się z  
**doświadczenia E** (Experience) w  
kontekście pewnego **zadania T** (Task) i  
**miary wydajności P** (Performance)

*Tom Mitchell, 1997*

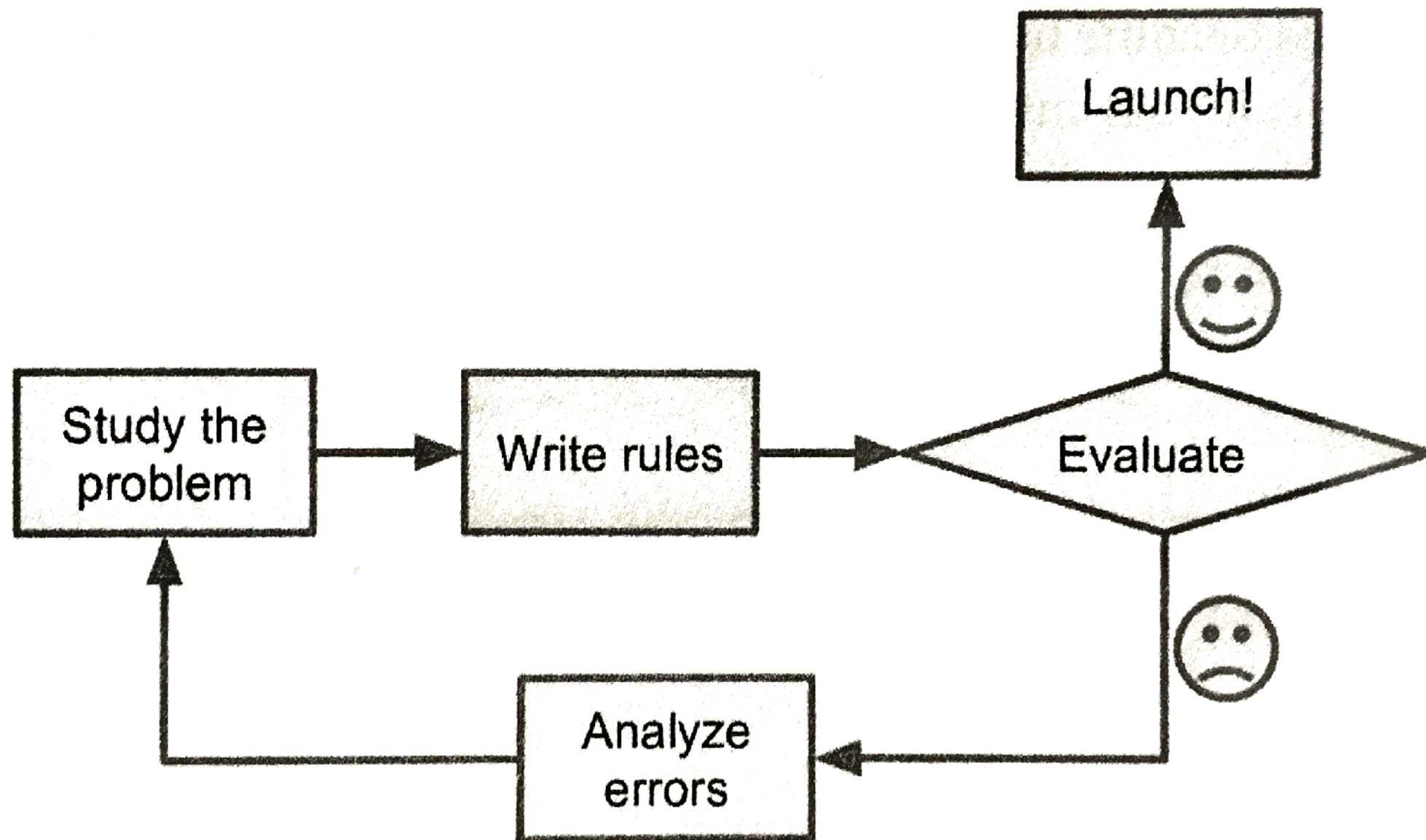
# Machine Learning w 15 min.

Program komputerowy uczy się z **doświadczenia E** (Experience) w kontekście pewnego **zadania T** (Task) i **miary wydajności P** (Performance)

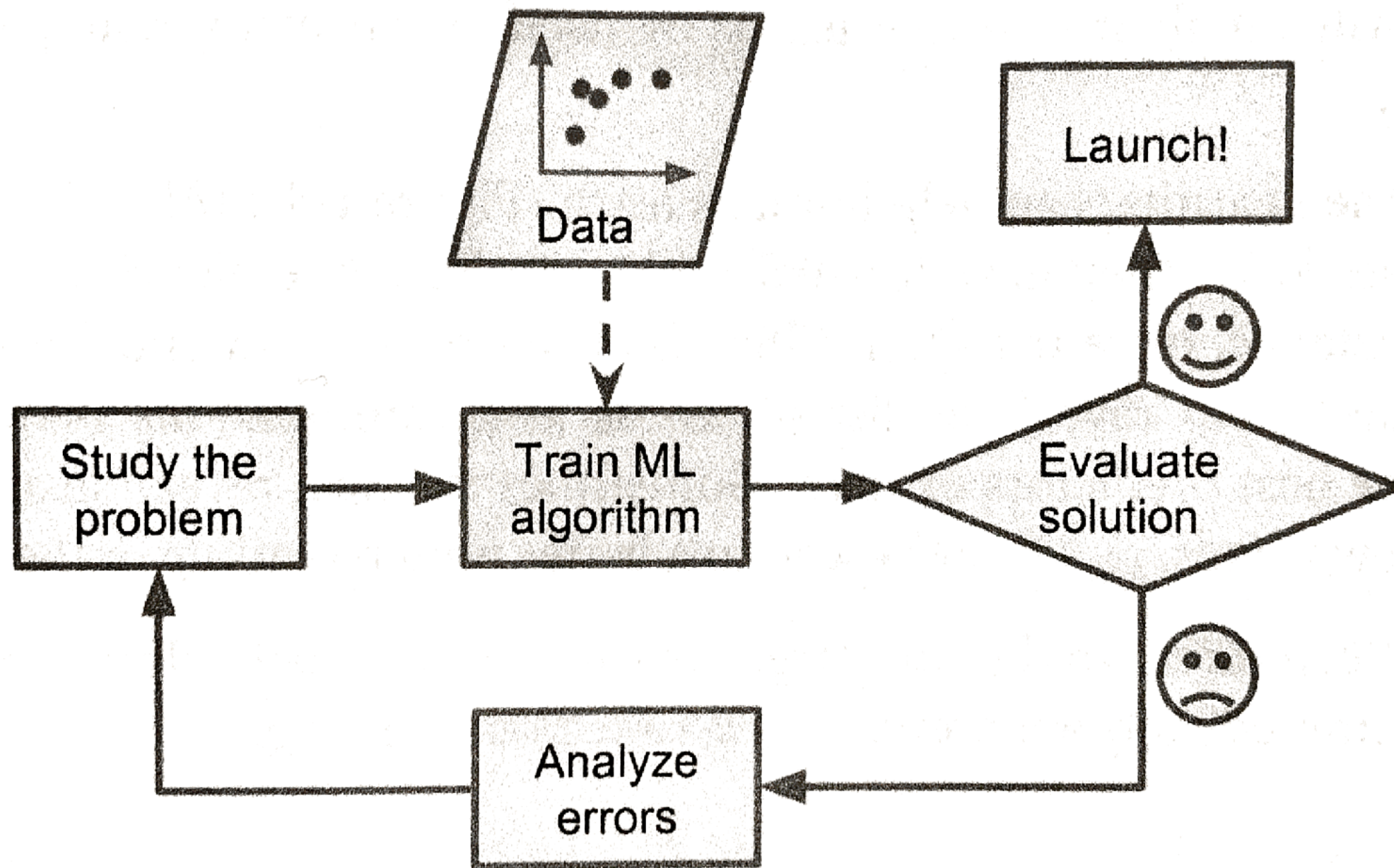
jeżeli jego wydajność na **T**, mierzona **P**, **wzrasta** wraz z doświadczeniem **E**

*Tom Mitchell, 1997*

# Machine Learning w 15 min.

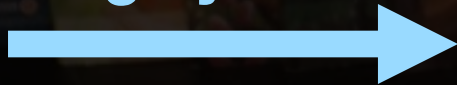


# Machine Learning w 15 min.

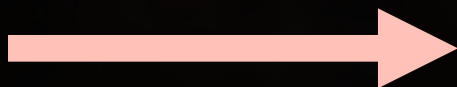


# Machine Learning w 15 min.

Reguły

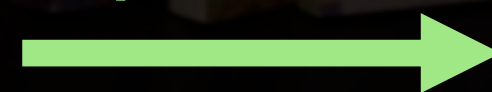


Dane



Tradycyjne  
programowanie

Odpowiedzi



*Talking  
with  
Minnie*

*The Mystery of the Star Ruby*  
give her and put it in her plastic container.  
She did the container carefully into the  
pocket of her backpack.  
"Jesse, do you want me to keep your  
money?" offered Grandfather. "It might be  
safer with me."  
"I'd like to look at it more," she told him.  
"I won't let my pack out of my sight. I  
promise."  
"Are you ready for lunch?" Grandfather  
asked the children.  
Jesse answered for all of them. "Yes!"  
The dining room was nearly filled when  
the Aldens walked in. Many people stood  
up and cheered.  
"Why is everyone clapping?" Violet  
asked Grandfather.  
"I think it's because of Jesse's incredible  
find," he replied.  
"How does it feel to discover a treasure?"  
Jonathan asked Jesse.  
She sat down, embarrassed at all the at-  
tention. "It could have been any of us. The  
ruby just happened to be in my bucket—it  
was just luck."

*Jesse's Dream*  
"What are you going to do with it?" Light  
asked, pointing the bucket of Italian bread.  
"I was thinking, suppose we sell the money  
and buy books for that library that was  
struck by lightning," Jesse suggested. "That  
is a family decision."  
"That's a great idea!" Benny said. "Let's  
do it!"  
The others agreed.  
"Jesse's money is bigger than yours," Light  
said to Donald. "And it's a star ruby. Unless  
Jesse's, she will win the contest."  
"It isn't over until it's over," Donald said  
lovely.  
After lunch, the kids went taking again.  
When the afternoon shadows grew long,  
they headed back to the cabins.  
Violet unlocked the door to her and  
Jesse's cabin. She immediately spotted a  
white envelope lying on the rug just inside  
the door.  
"This has your name on it," she said,  
handing it to Jesse.

GREEN

RED

YELLOW

BLUE

# Machine Learning w 15 min.

Reguły

Dane

Tradycyjne  
programowanie

Odpowiedzi

Dane

Odpowiedzi \*

Machine Learning

Reguły

\* w zależności od typu uczenia

# Typy Machine Learning



# Typy Machine Learning



Nadzorowane  
(Supervised Learning)

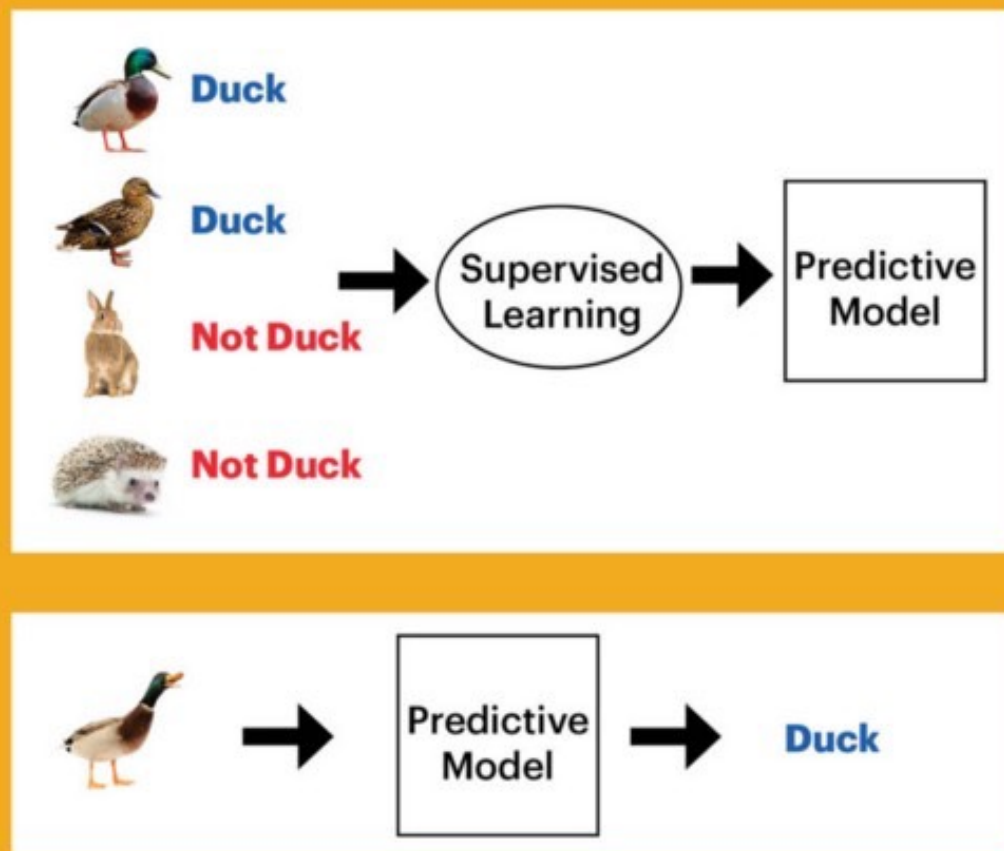
# Typy Machine Learning



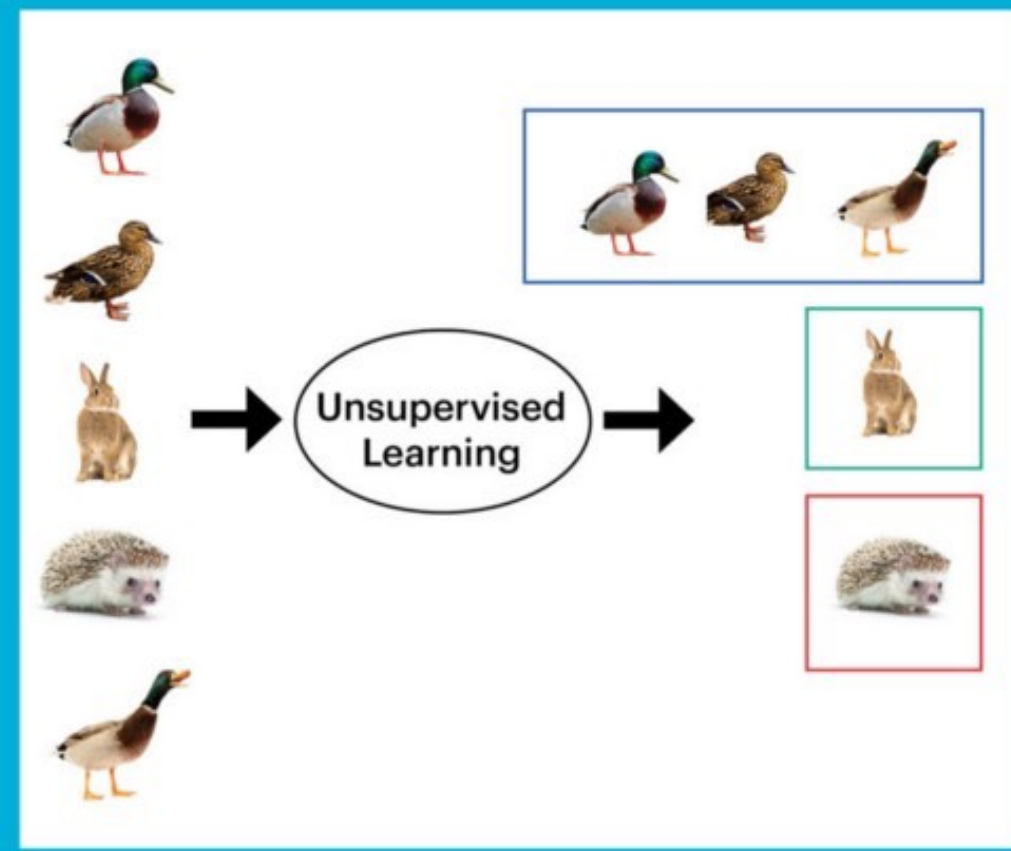
Nienadzorowane  
(Unsupervised Learning)

# Typy Machine Learning

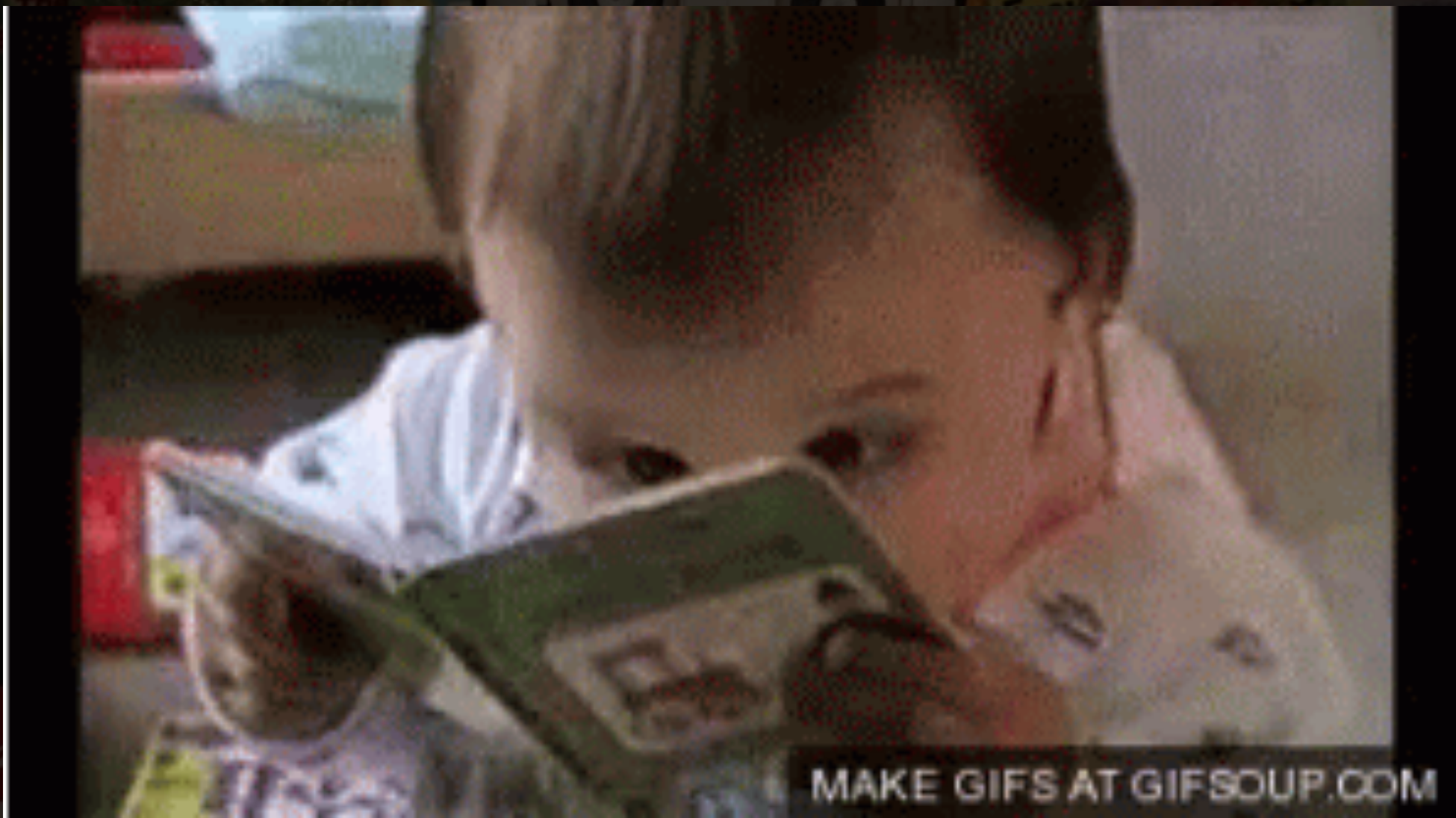
## Supervised Learning (Classification Algorithm)



## Unsupervised Learning (Clustering Algorithm)



# Typy Machine Learning



Ze wzmocnieniem  
(**Reinforcement Learning**)

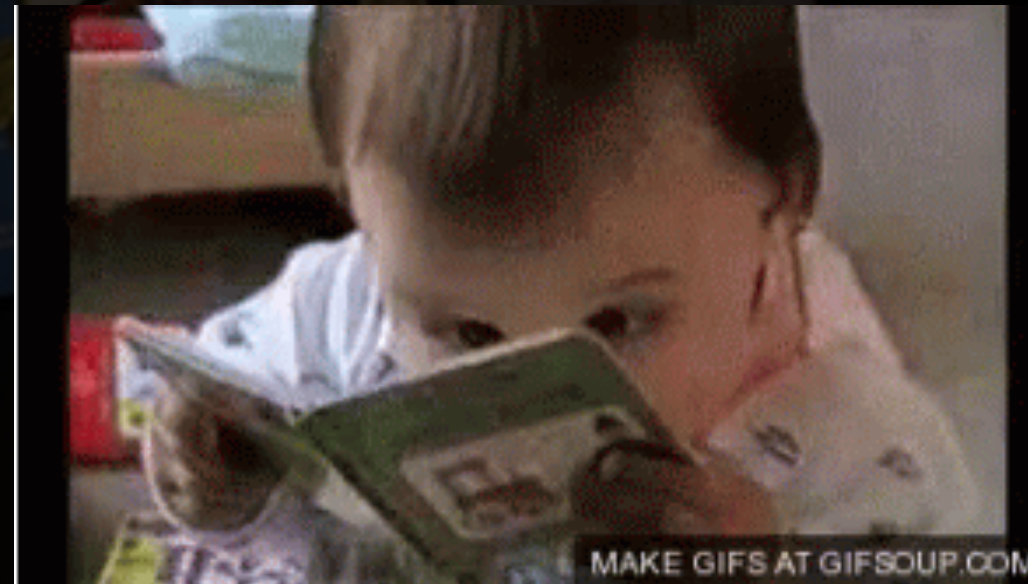
# Typy Machine Learning



Nadzorowane  
**(Supervised)**



Nienadzorowane  
**(Unsupervised)**

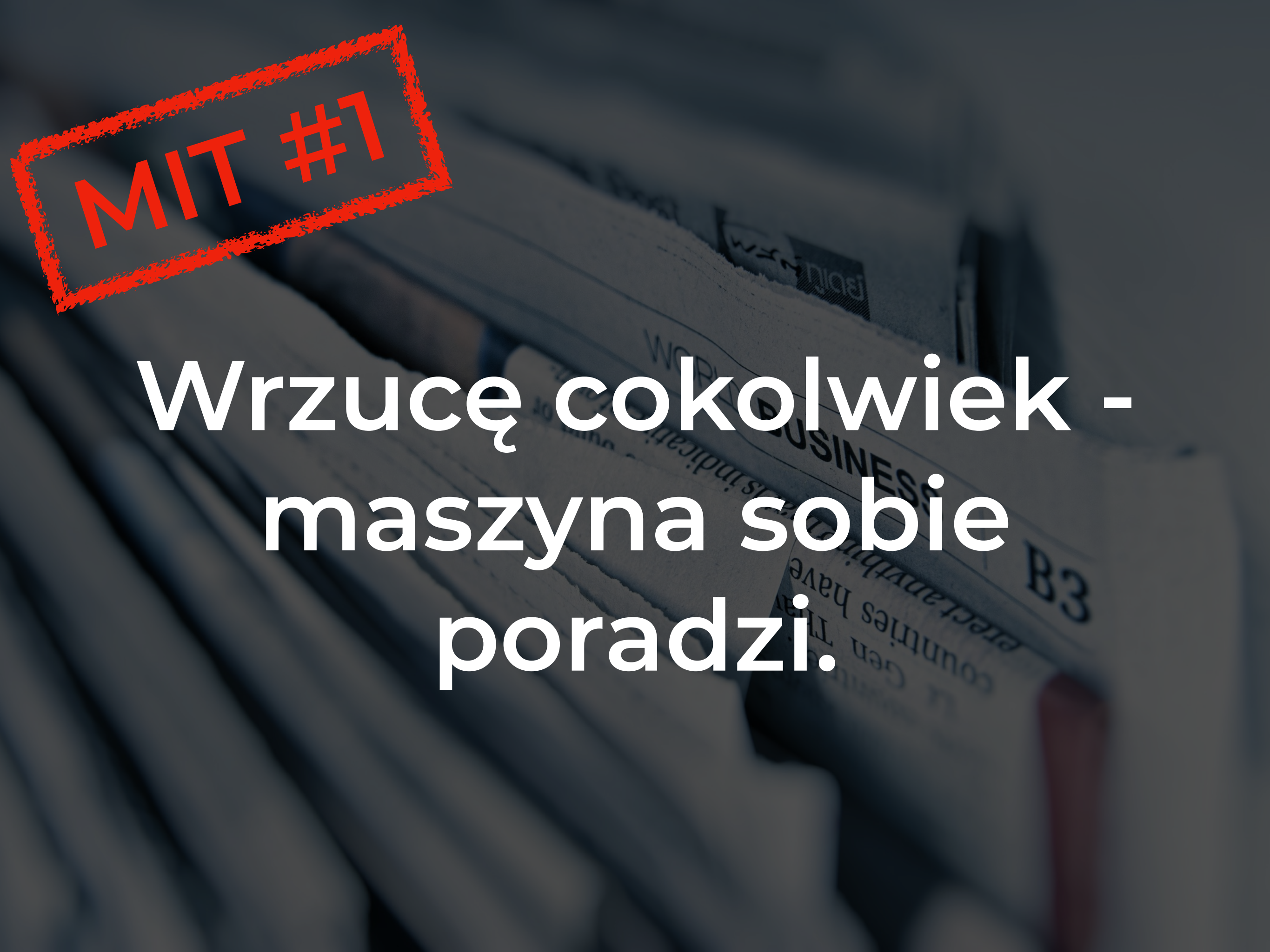


Ze wzmacnieniem  
**(Reinforcement)**

A stack of newspapers is shown, with the top one clearly displaying the word 'BUSINESS' and the page number 'B3'. Overlaid on the center of the stack is the word 'MITY' in a large, bold, white sans-serif font, with a large white question mark directly beneath it. The background is a dark, muted blue-grey color.

# MITY

?



MIT #1

Wrzucę cokolwiek -  
maszyna sobie  
poradzi.



**GARBAGE IN**  
**=**  
**GARBAGE OUT**

MIT #2

# Deep Learning, Machine Learning i Sztuczna Inteligencja to to samo

# Difference between machine learning and AI:

If it is written in **Python**,  
it's probably **machine learning**.

If it is written in **PowerPoint**,  
it's probably **AI**.



Artificial  
Intelligence



Machine  
Learning



Data  
Science



Deep  
Learning



Machine Learning  
może działać bez  
udziału ludzi

# Stworzenie

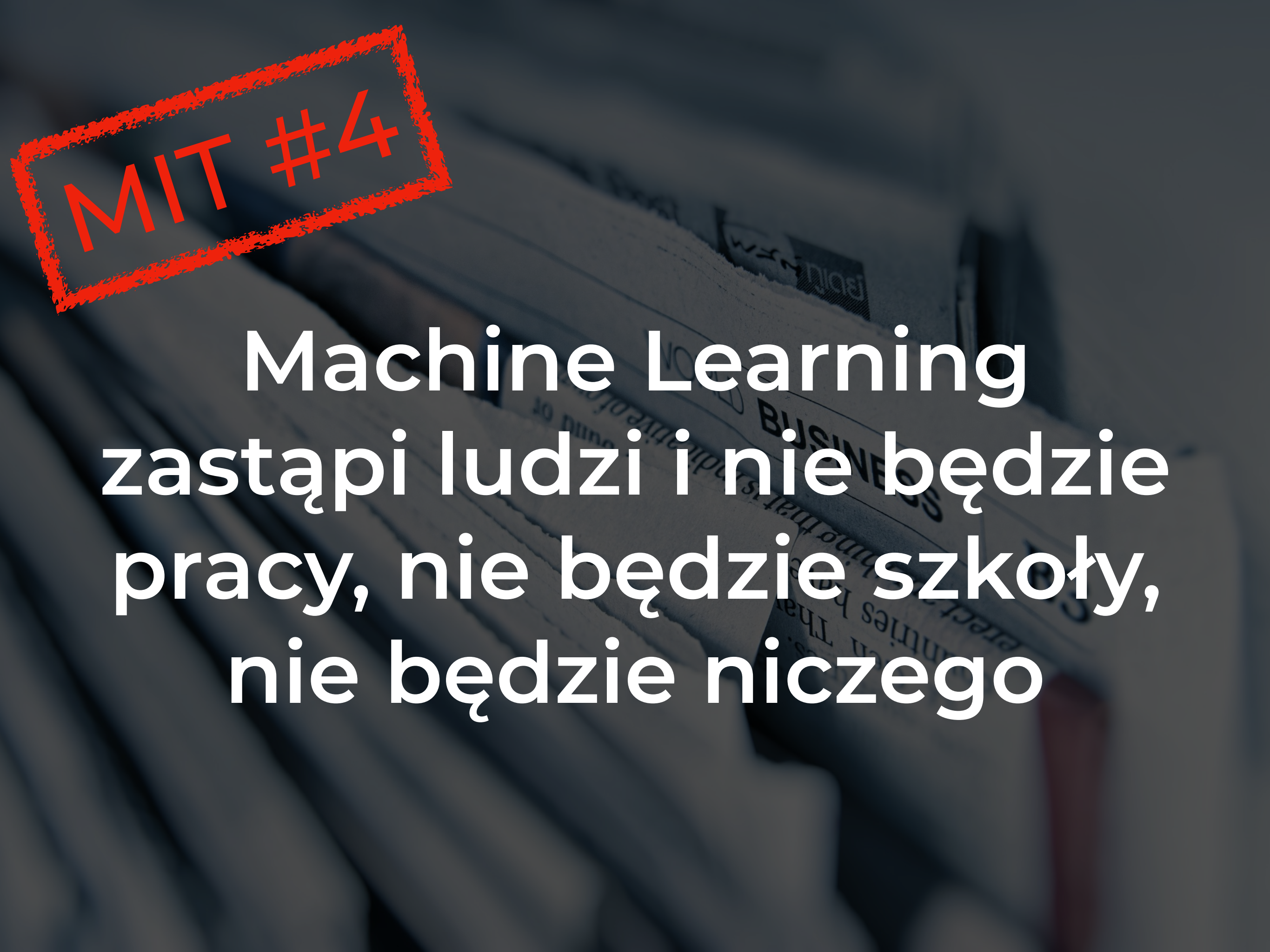


# Utrzymanie



# Zapewnienie jakości





MIT #4

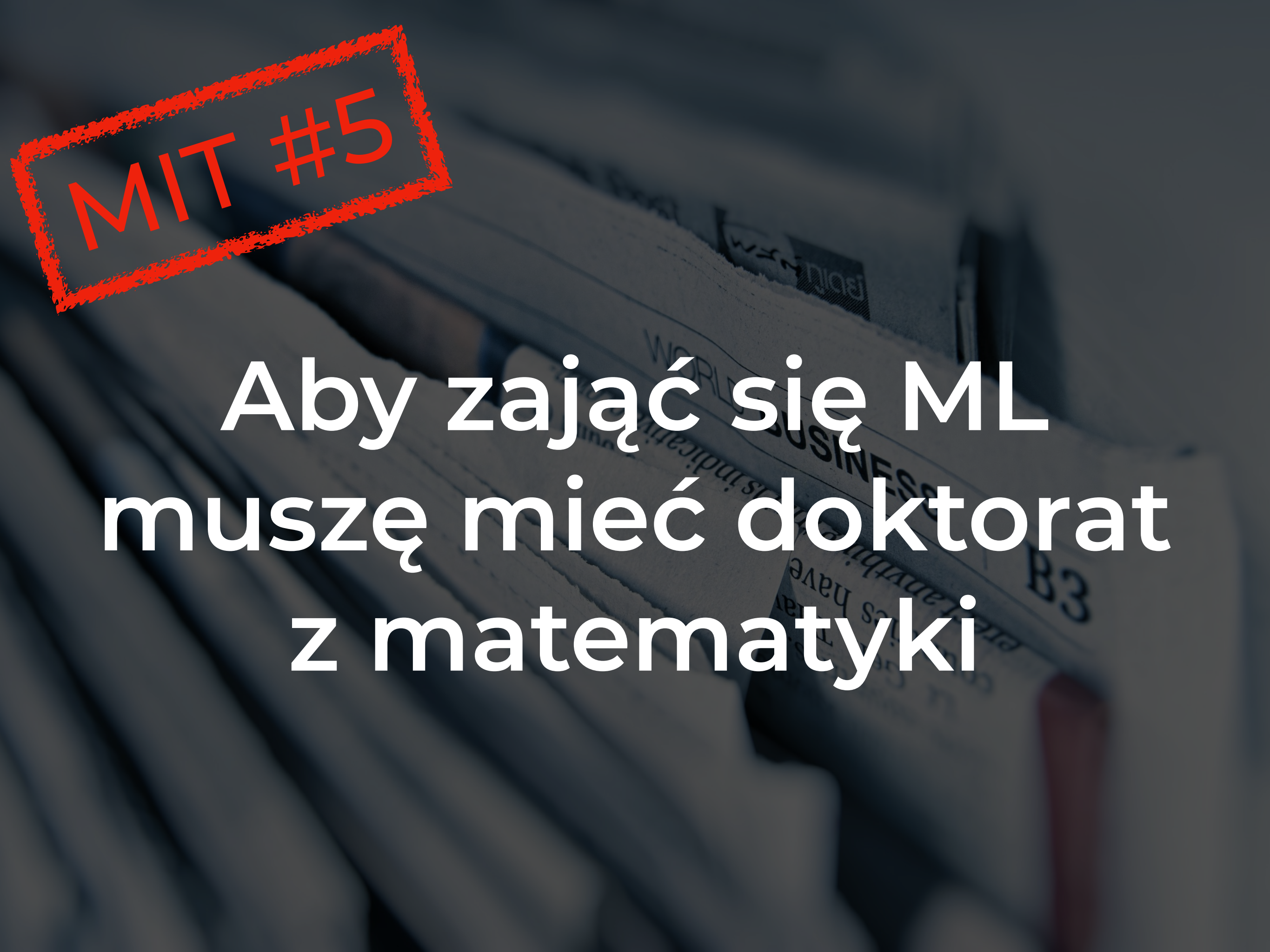
Machine Learning  
zastąpi ludzi i nie będzie  
pracy, nie będzie szkoły,  
nie będzie niczego



**WYELIMINOWAĆ**

~~WYELIMINOWAĆ~~

ZMIENIĆ



MIT #5

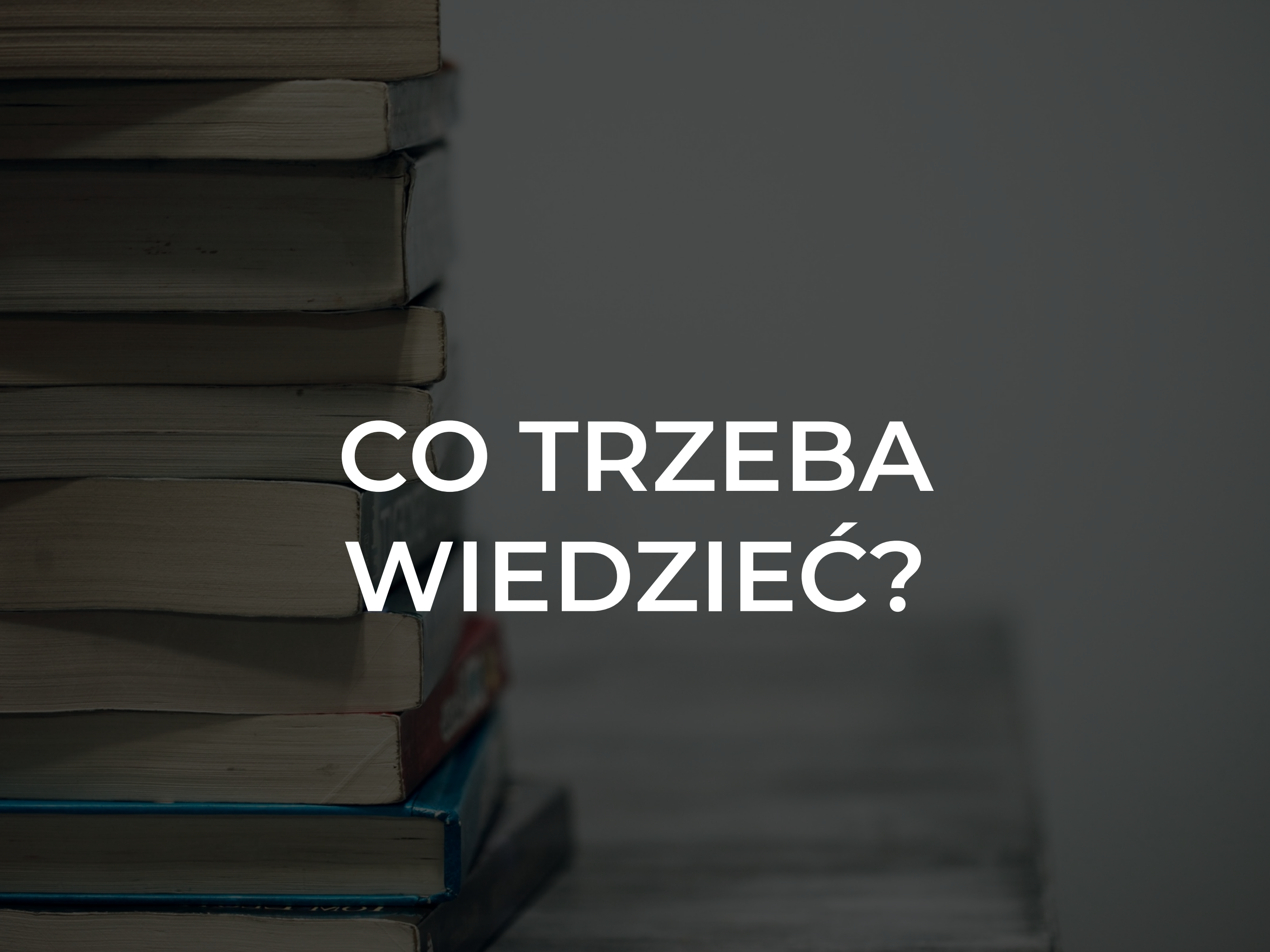
Aby zająć się ML  
muszę mieć doktorat  
z matematyki

A stack of newspapers is shown, with the top one being the 'WORLD BUSINESS' section. The text 'NIE. NIE MUSISZ.' is overlaid in large, white, sans-serif capital letters. The background is a dark, muted blue-grey color.

**NIE. NIE MUSISZ.**

A stack of newspapers is shown, with the top one being the 'WORLD BUSINESS' section. The text 'NIE. NIE MUSISZ.' is overlaid in large, white, sans-serif capital letters. The background is a dark, muted blue-grey color.

**NIE. NIE MUSISZ.**



CO TRZEBA  
WIEDZIEĆ?

# “Trochę” Matematyki

Odrobinę algebry

Podstawy statystyki

Ciut rachunku  
różniczkowego

Kapkę  
probabilistyki





# “Trochę” R / Pythona

Podstawy  
programowania

Dobre praktyki  
programistyczne

Importowanie bibliotek

Świetne googlowanie

Kursik on-line  
z ML

FAST.AI

ANDREW NG

COURSERA

wiele, wiele więcej...



MIT #6

Zostanie Machine  
Learningowym  
wymiataczem jest proste  
i zajmie... ze 3 miesiące

nr



McDonald's

WALK-UP

all day  
BREAKFAST  
MORE  
choices

Sul

# Na wynos

- > Machine Learning nie jest straszny
- > Projekty ML >> czytanie o ML
- > Machine Learning to nie magia
- > Najlepszy czas



# Q&A

[konrad@uczynymaszyny.pl](mailto:konrad@uczynymaszyny.pl)

[uczynymaszyny.pl/ml](https://uczynymaszyny.pl/ml)



**WSZYSTKIEGO  
DOBREGO! :)**

ITAD WSliZ Rzeszów, 10.12.2019