

Karol Pękala

Projekt Inżynierski

# Zastosowanie deep reinforcement learning w silniku Unreal Engine

Opiekun pracy:  
dr hab. inż. Roman Zajdel

Rzeszów, 19.01.2023



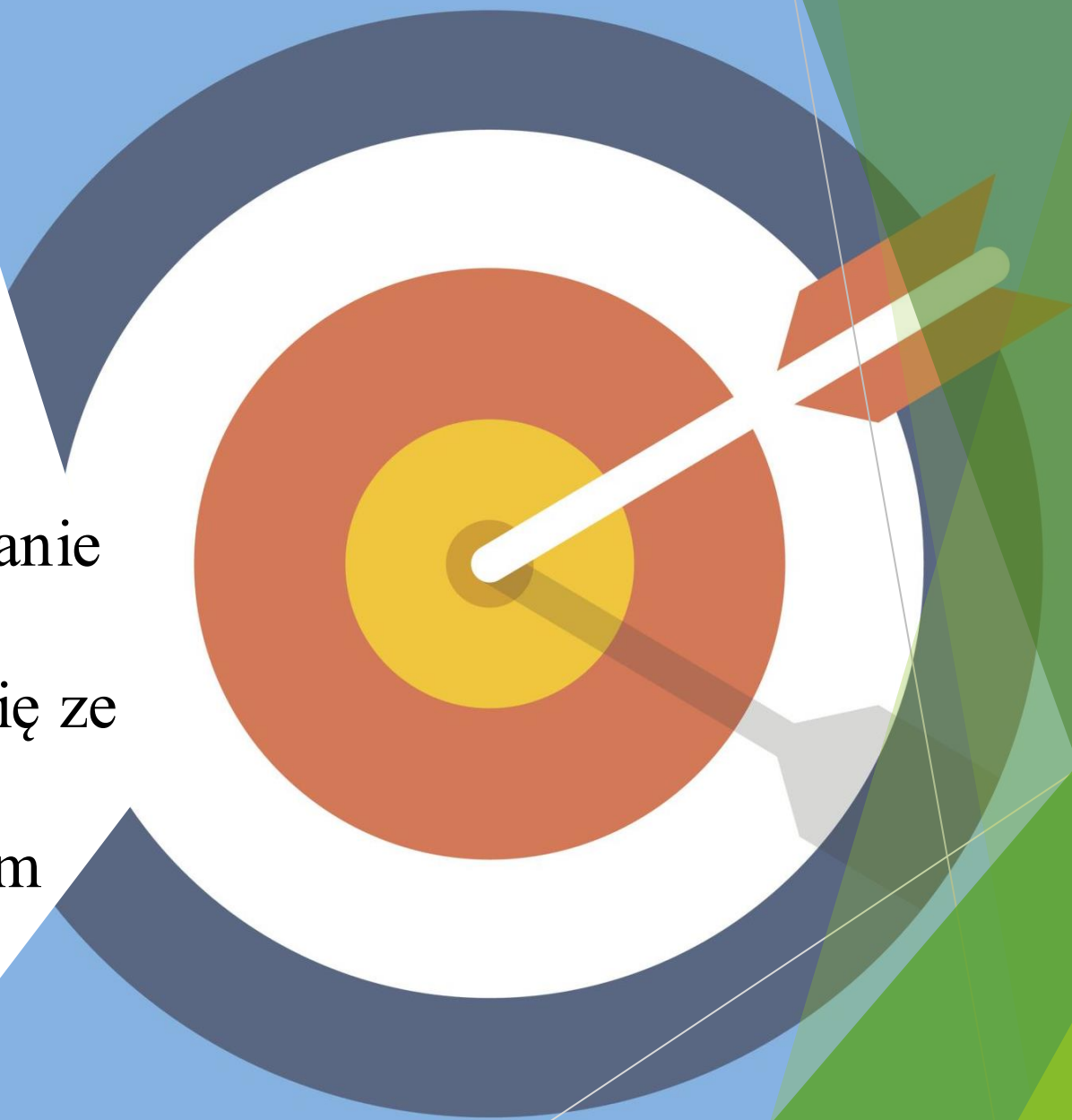
WYDZIAŁ  
**ELEKTROTECHNIKI  
I INFORMATYKI**  
POLITECHNIKI RZESZOWSKIEJ

# Plan prezentacji

- Cel projektu
- Wykorzystane narzędzia
- Gra i Agent
- Eksperymenty
- Wyniki
- Podsumowanie
- Co dalej?

# Cel projektu

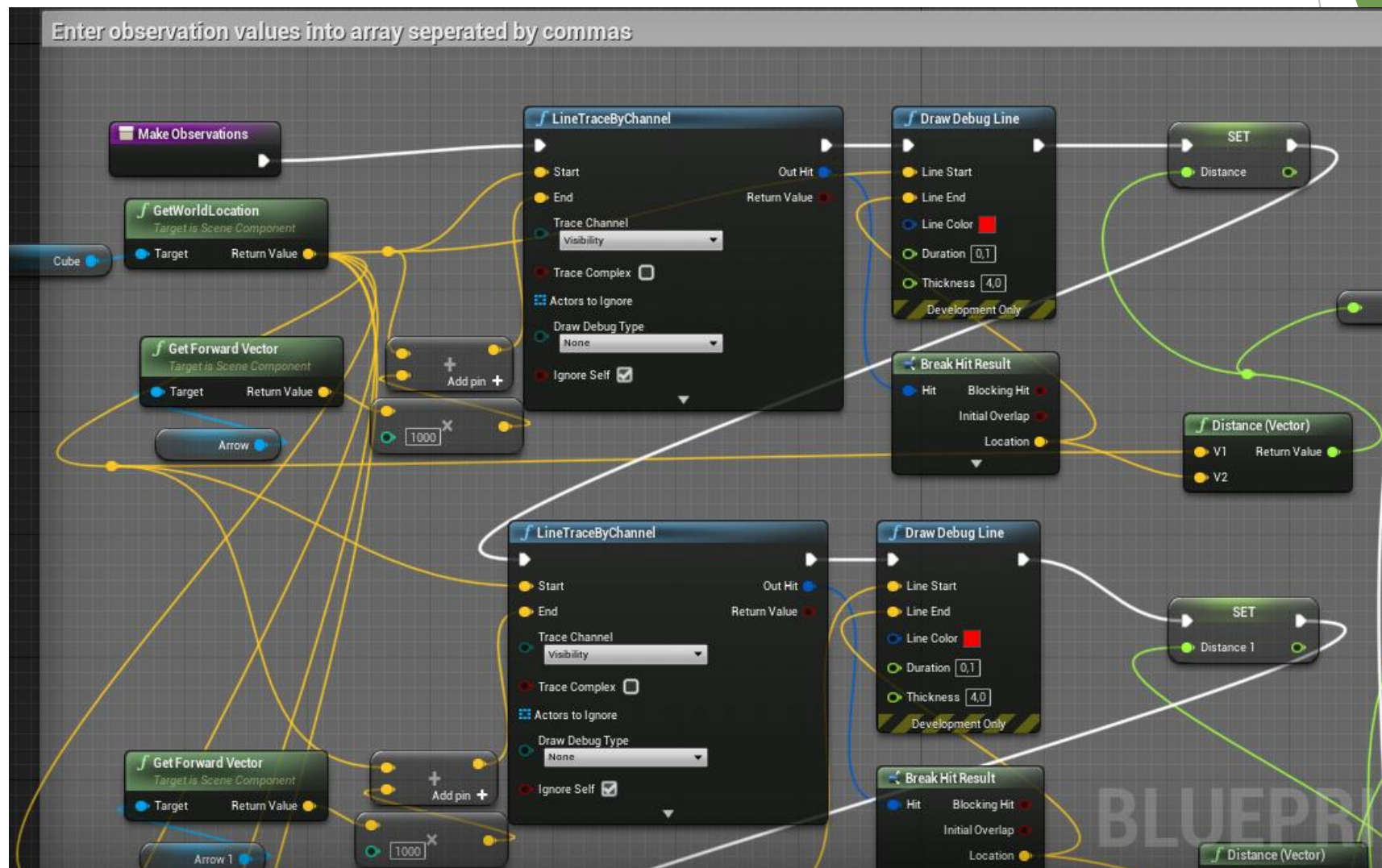
Celem projektu było zaprezentowanie możliwości implementacji algorytmów głębokiego uczenia się ze wzmocnieniem w grach komputerowych, z wykorzystaniem silnika Unreal Engine.



# Wykorzystane narzędzia



# Wykorzystane narzędzia



# Wykorzystane narzędzia



The screenshot shows the product page for the 'MindMaker Machine Learning AI Plugin' on the Unreal Engine Marketplace. The main banner features five colorful, stylized robots against a blue sky with clouds. Below the banner is a navigation bar with thumbnails for the product and its documentation. The right sidebar contains the product title, author information, a star rating, a description, and technical specifications.

## MindMaker Machine Learning AI Plugin

Aaron Krumins - Code Plugins - Nov 6, 2020

★★★★★ 10

AI Plugin that enables a variety of python based Machine Learning libraries within Unreal Engine

[Sign in to Download](#)

**Supported Platforms**

- Windows

**Supported Engine Versions**

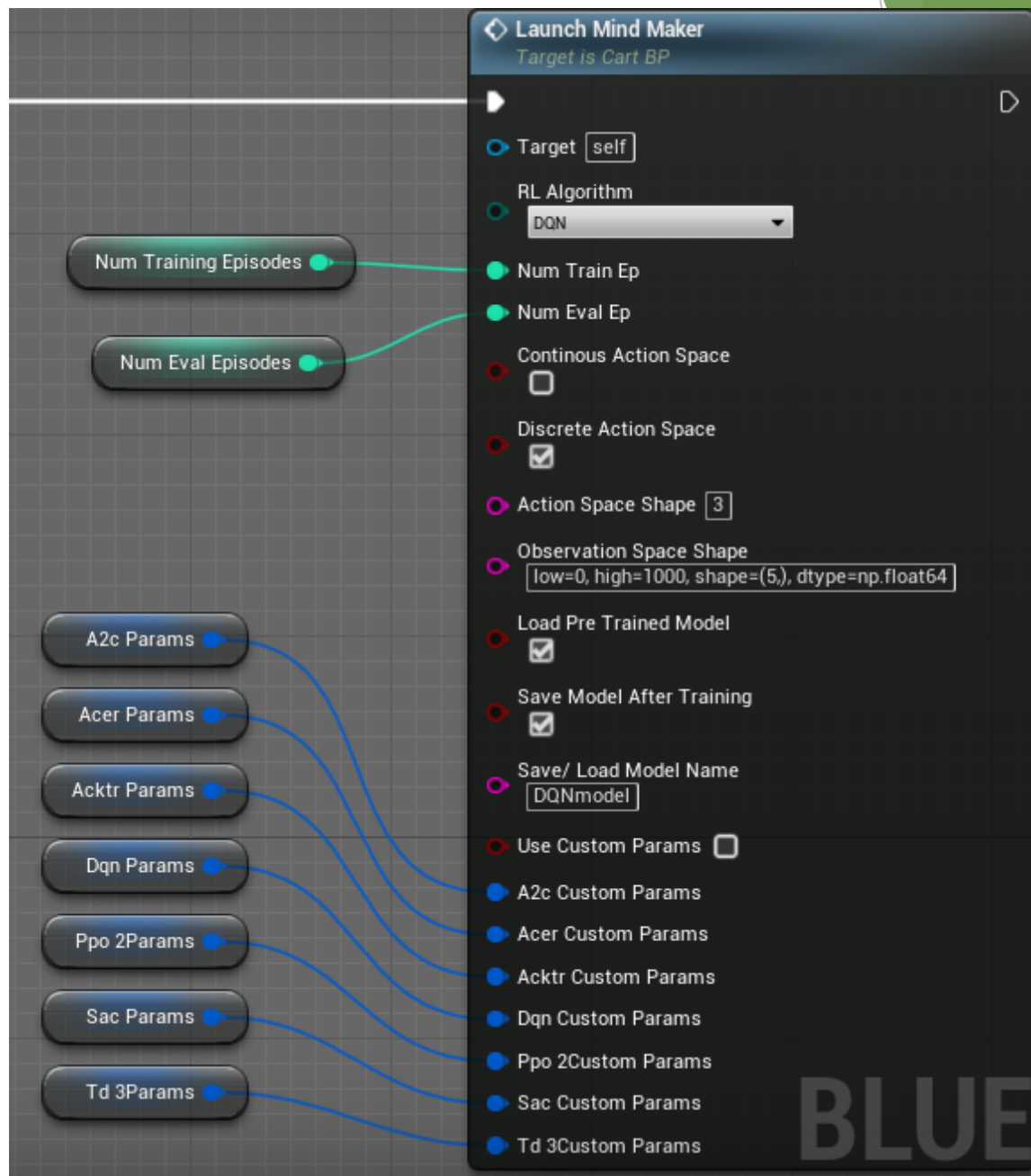
4.27, 5.0 - 5.1

**Download Type**

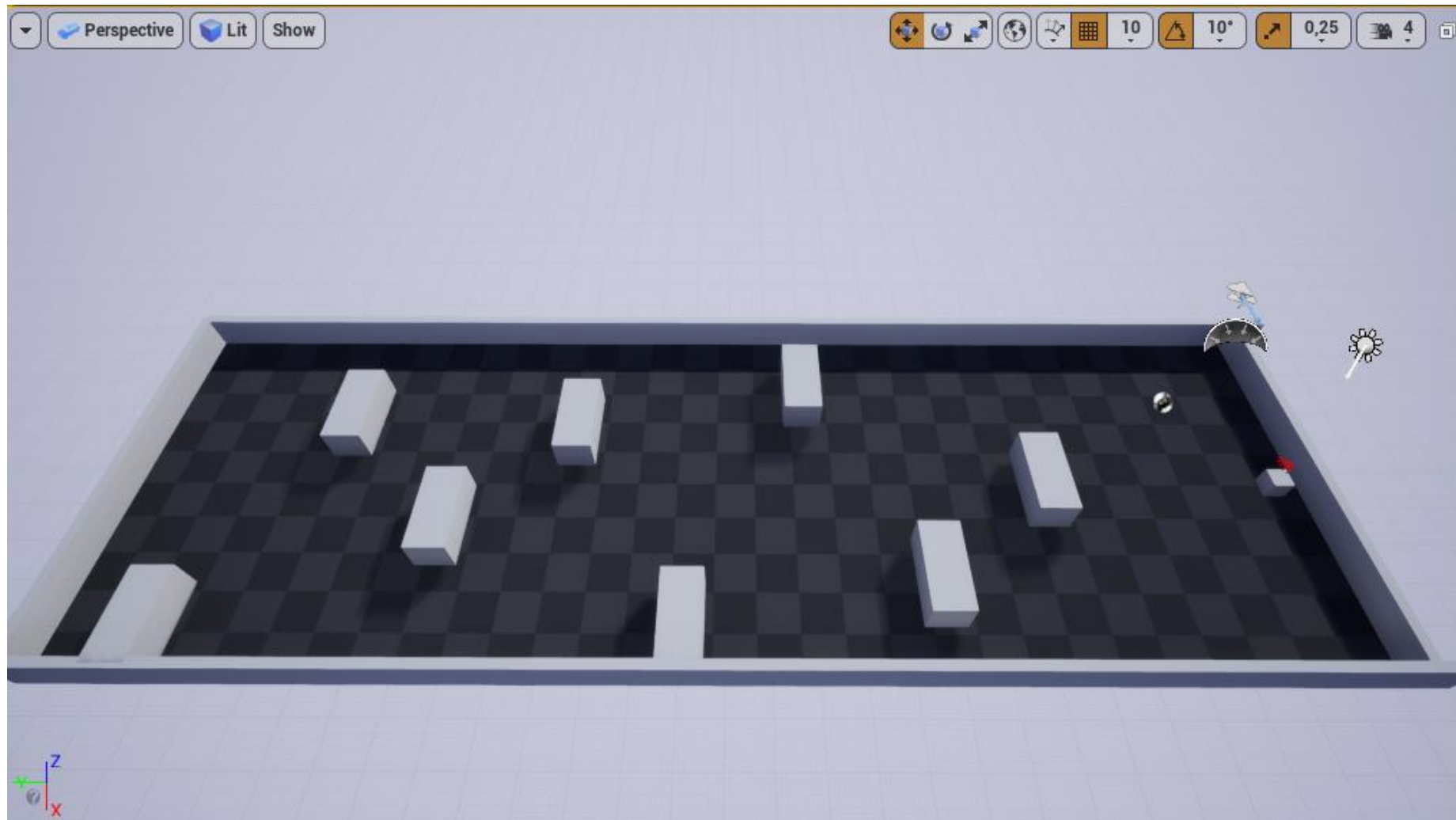
Engine Plugin



# Wykorzystane narzędzia

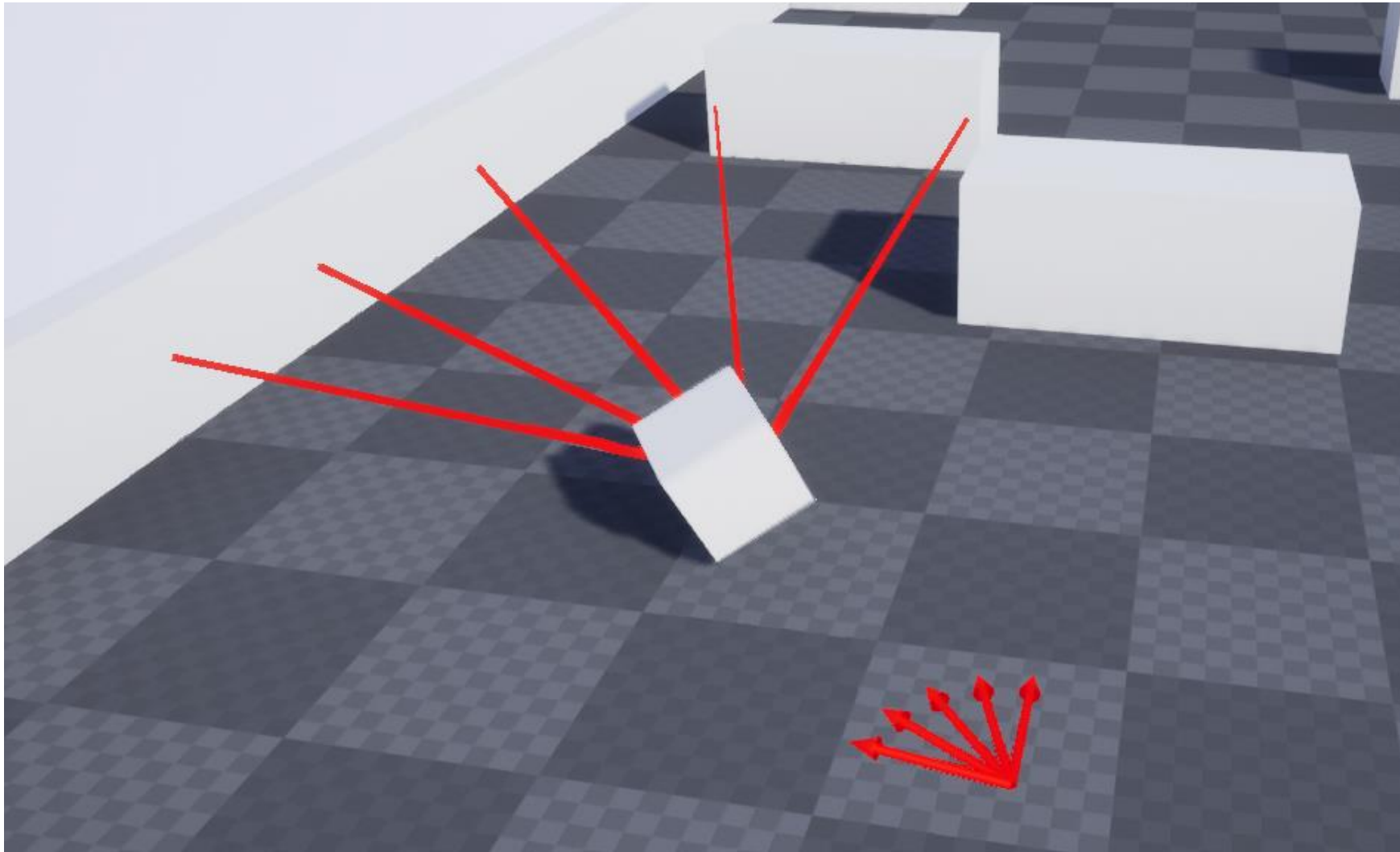


# Gra i Agent





# Gra i Agent



# Eksperymenty

LIGHTING NEEDS TO BE REBUILT (2 unbuilt)

Predicted Action:0.0 "screenMessages" to suppress

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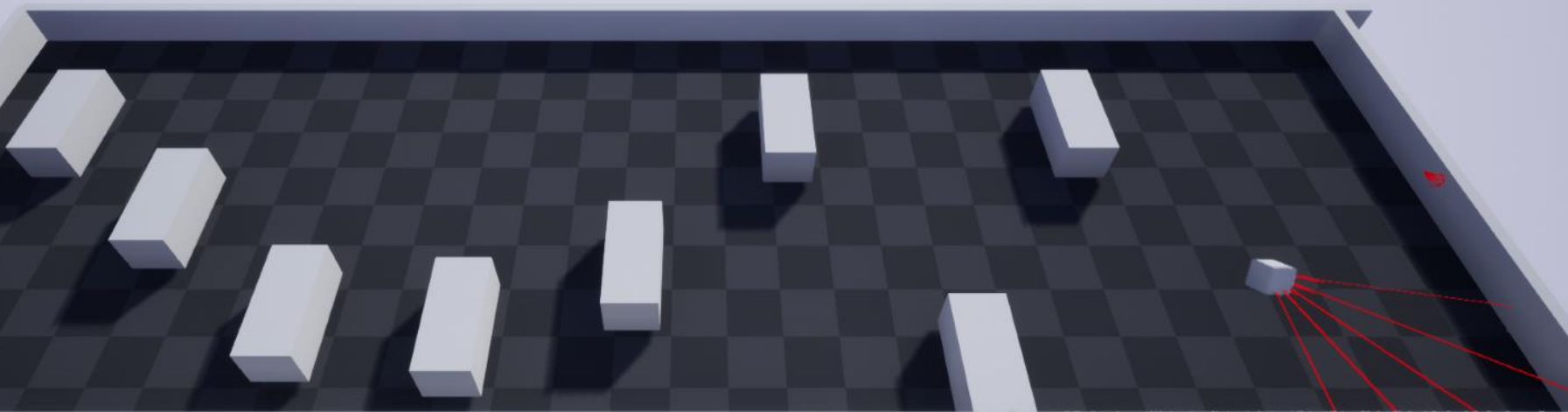
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Predicted Action:0.0

Predicted Action:0.0



# Wyniki

	DQN	A2C	ACER	ACKTR	PPO
I Eksperyment lr=default epizodów =1000	2100m	450m	600m	650m	550m
II Eksperyment lr=default * 10 epizodów =1000	1900m	1500m	400m	500m	700m
III Eksperyment lr=default epizodów =5000	3000m	900m	1300m	1800m	2050m

# Podsumowanie



Cel zrealizowano



Problemy



Osiągnięcia



Efekt pracy

# Co dalej?



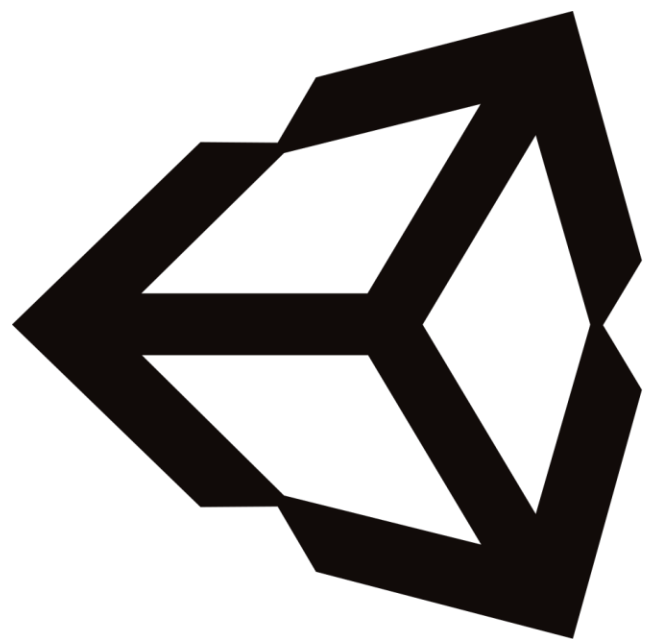
ROZWINIĘCIE GRY - NOWE  
PRZESZKODY, WIĘCEJ AKCJI,  
WIĘCEJ EKSPERYMENTÓW



NOWE POZIOMY, INNE  
DYSCYPLINY



NOWA PLATFORMA



# unity

Co dalej?





► Dziękuję za uwagę.