



# ARTIFICIAL INTELLIGENCE

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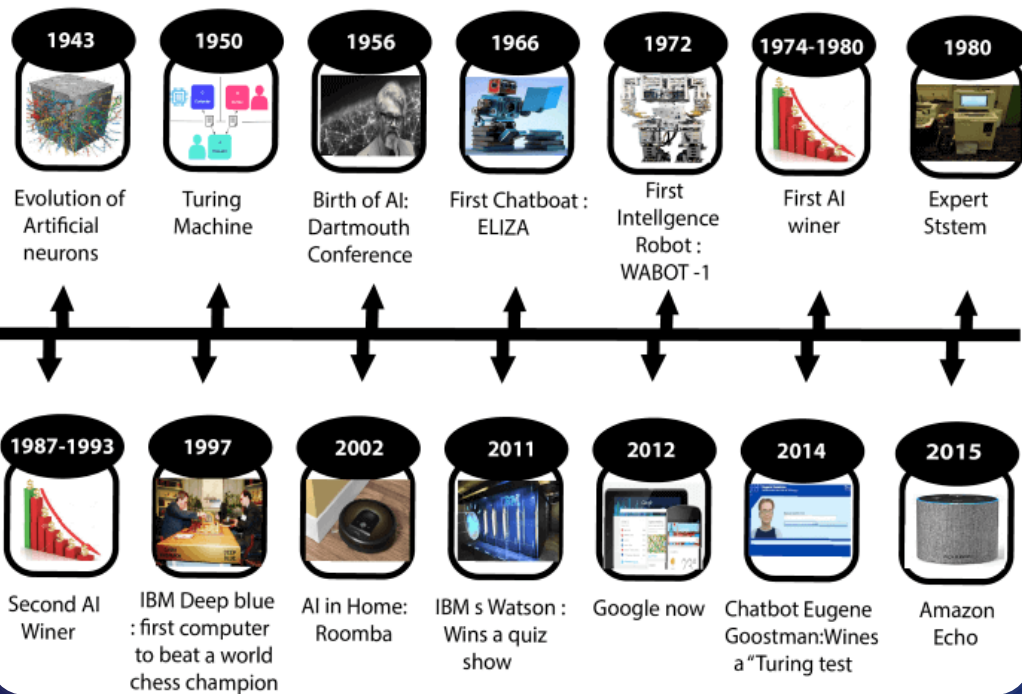
# INTRODUCTION

- Artificial intelligence (AI) is the intelligence exhibited by machines or software.
- Major AI researchers and textbooks define this field as "the study and design of intelligent agents", in which an intelligent agent is a system that perceives its environment and takes actions that maximize its chances of success.
- John McCarthy, who coined the term in 1955, defines
- It as “the science and engineering of making intelligent machines”.
- Some say it’s putting the human mind into computers.
- The field was founded on the claim that a central property of humans, human intelligence -- the sapience of *Homo sapiens*—“can be so precisely described that a machine can be made to simulate it.



# HISTORY OF AI

## History of AI



## The birth of Artificial Intelligence (1952-1956)

- **Year 1955:** Allen Newell and Herbert A. Simon created the "first artificial intelligence program" which was named as "**Logic Theorist**". This program had proved 38 of 52 Mathematics theorems, and find new and more elegant proofs for some theorems.
- **Year 1956:** The word "Artificial Intelligence" first adopted by American Computer scientist John McCarthy at the Dartmouth Conference. For the first time, AI coined as an academic field.

## The first AI winter (1974-1980)

- The duration between years 1974 to 1980 was the first AI winter duration. AI winter refers to the time period where computer scientist dealt with a severe shortage of funding from government for AI researches.
- During AI winters, an interest of publicity on artificial intelligence was decreased.

## A boom of AI (1980-1987)

- **Year 1980:** After AI winter duration, AI came back with "Expert System". Expert systems were programmed that emulate the decision-making ability of a human expert.
- In the Year 1980, the first national conference of the American Association of Artificial Intelligence **was held at Stanford University.**

## The second AI winter (1987-1993)

- The duration between the years 1987 to 1993 was the second AI Winter duration.
- Again Investors and government stopped in funding for AI research as due to high cost but not efficient result. The expert system such as XCON was very cost effective.

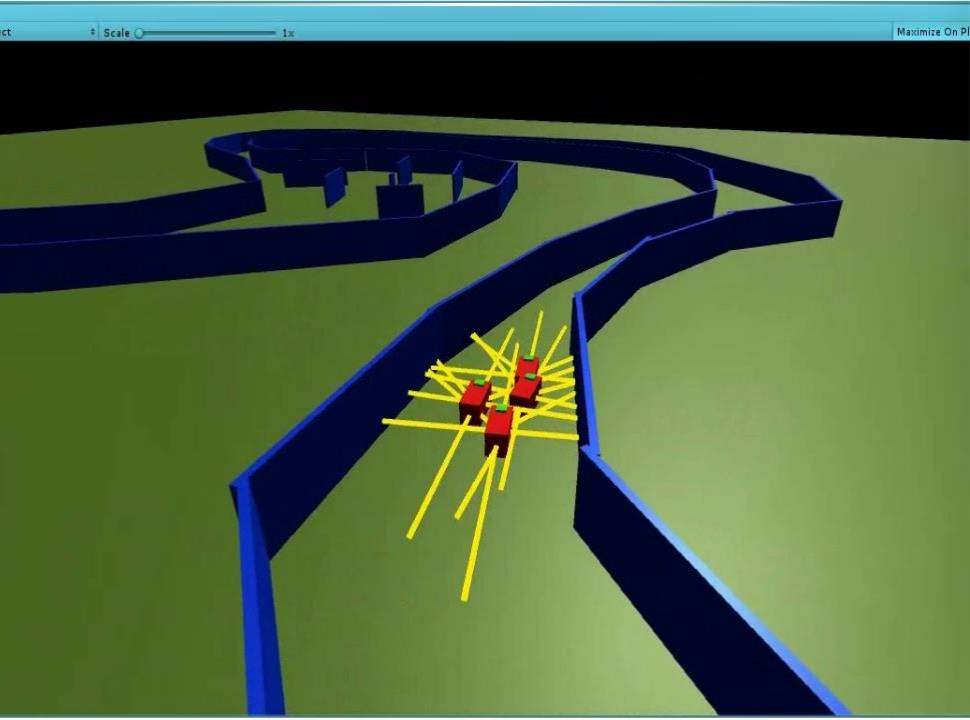
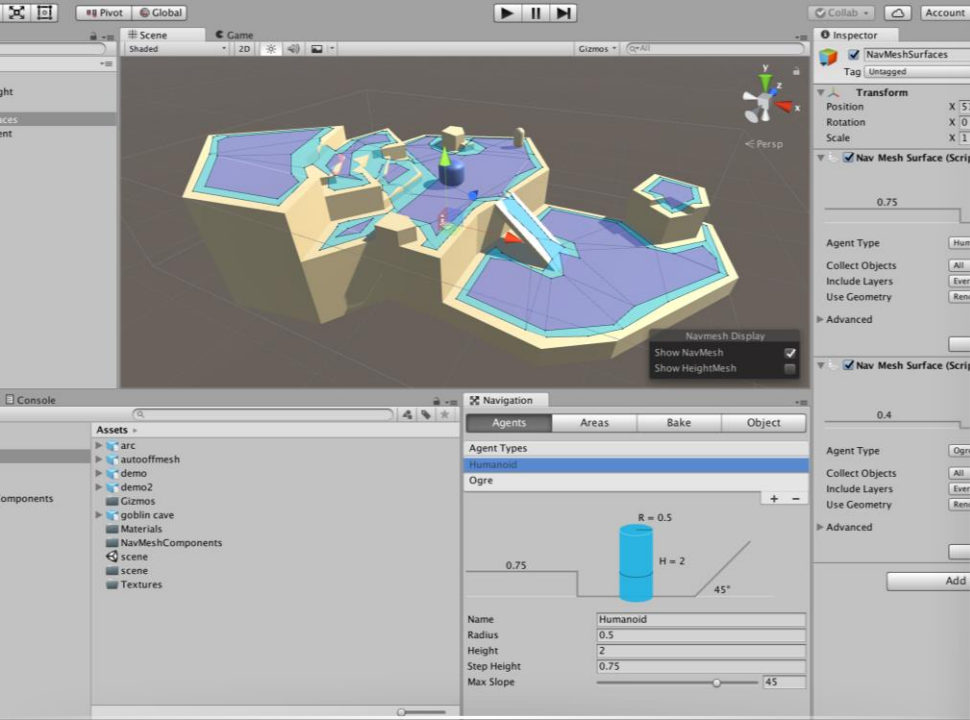
## The emergence of intelligent agents (1993-2011)

- **Year 1997:** In the year 1997, IBM Deep Blue beats world chess champion, Gary Kasparov, and became the first computer to beat a world chess champion.
- **Year 2002:** for the first time, AI entered the home in the form of Roomba, a vacuum cleaner.
- **Year 2006:** AI came in the Business world till the year 2006. Companies like Facebook, Twitter, and Netflix also started using AI.

## Deep learning, big data and artificial general intelligence (2011-present)

- **Year 2011:** In the year 2011, IBM's Watson won jeopardy, a quiz show, where it had to solve the complex questions as well as riddles. Watson had proved that it could understand natural language and can solve tricky questions quickly.
- **Year 2012:** Google has launched an Android app feature "Google now", which was able to provide information to the user as a prediction.
- **Year 2014:** In the year 2014, Chatbot "Eugene Goostman" won a competition in the infamous "Turing test."
- **Year 2018:** The "Project Debater" from IBM debated on complex topics with two master debaters and also performed extremely well.
- Google has demonstrated an AI program "Duplex" which was a virtual assistant and which had taken hairdresser appointment on call, and lady on other side didn't notice that she was talking with the machine.



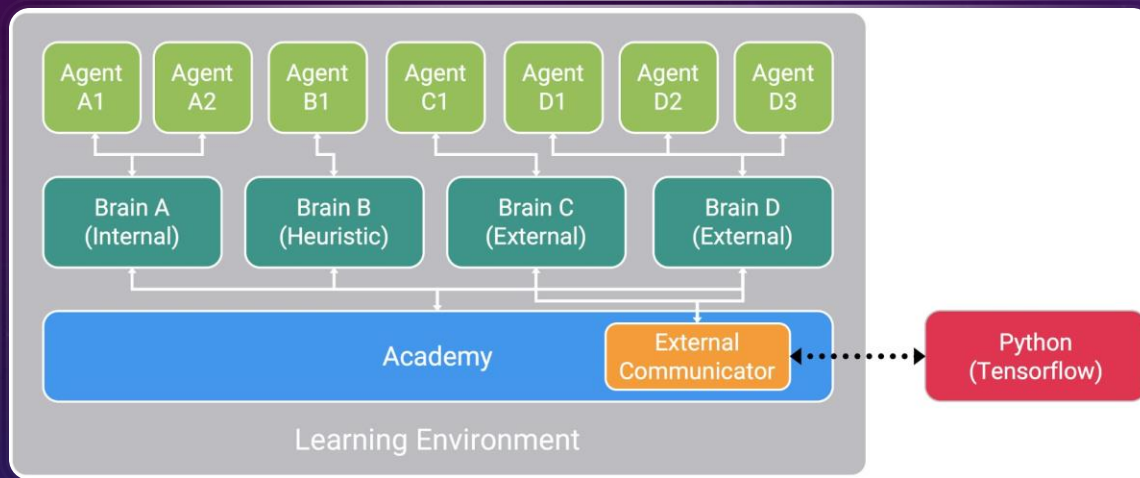


# 2 TECHNIQUES OF AI IN UNITY

1. Machine Learning

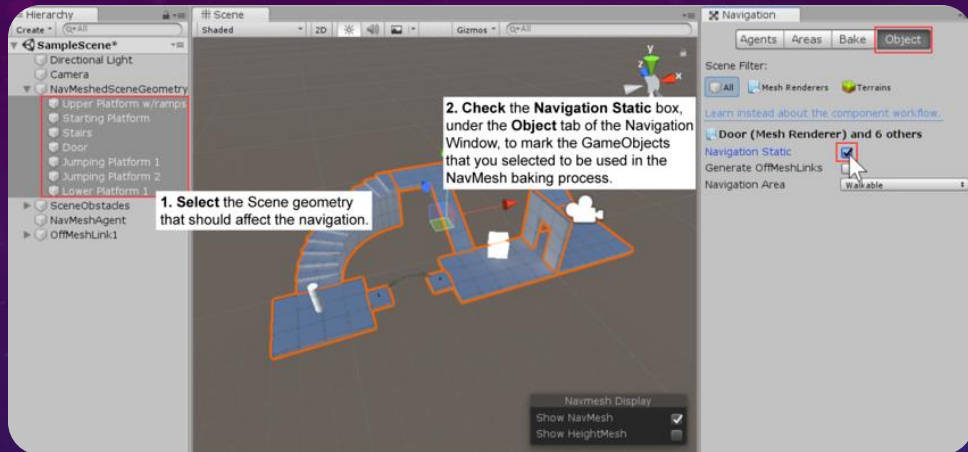
2. Nav Mesh

# MACHINE LEARNING



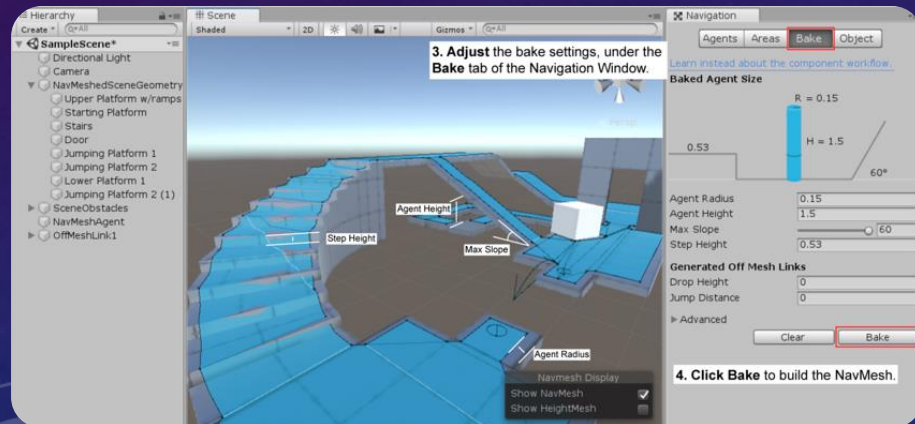
- *The Unity Machine Learning Agents SDK (ML-Agents), currently in beta, is an open-source Unity plugin that enables games and simulations to serve as environments for training intelligent agents. Agents can be trained using reinforcement learning, imitation learning, neuroevolution, or other machine learning methods through a simple-to-use Python API. We collected together the latest resources for you to get started with the SDK.*
- This is a helpful and very accessible session to start learning about ML-Agents. Danny Lange, VP of Machine Learning and AI at Unity gives the overview on the most exciting advances that AI will bring over the next 12 months. Then, Arthur Juliani, Lead Engineer on ML-Agents explains the workflow in Unity, how the plugin works with a Unity project, the current training methods available, and the latest and upcoming features.

# NAV-MESH



- The process of creating a **Nav-Mesh** from the level geometry is called **Nav-Mesh Baking**. The process collects the Render Meshes and **Terrains** of all Game Objects which are marked as Navigation Static, and then processes them to create a navigation **mesh** that approximates the walkable surfaces of the level.

- The resulting Nav-Mesh will be shown in the scene as a blue overlay on the underlying level geometry whenever the Navigation Window is open and visible.



- As you may have noticed in the above pictures, the walkable area in the generated Nav-Mesh appears shrunk. The Nav-Mesh represents the area where the center of the agent can move. Conceptually, it doesn't matter whether you regard the agent as a point on a shrunk Nav-Mesh or a circle on a full-size Nav-Mesh since the two are equivalent. However, the point interpretation allows for better runtime efficiency and also allows the designer to see immediately whether an agent can squeeze through gaps without worrying about its radius.



THANK YOU