

**Deep
Learning**

VS

**Machine
Learning**

Artificial Neural Networks

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*One of The Greatest Problems Faced Content
Processing Is !!!*



Homographs !!!

Homographs in Retrieval

Google

quarter



https://dictionary.cambridge.org › dictionary › quarter

QUARTER | meaning in the Cambridge English Dictionary

7 days ago — quarter noun [C] (FOURTH PART) : one of four equal · almost ; A quarter of/to the hour means **A quarter past/after the hour means** A quarter is one ...

https://en.wikipedia.org › wiki › Quarter_(United_State...

Quarter (United States coin) - Wikipedia

The **quarter**, short for **quarter dollar**, is a United States coin worth 25 cents, one-quarter of a dollar. The coin sports the profile of George Washington on ...

Composition: From 1965: 91.67% Cu, 8.33% ... Years of minting: 1796, 1804–1807, 1815–...

Value: 0.25 U.S. Dollar

Diameter: 24.26 mm (0.955 in)

Washington quarter · America the Beautiful quarters · 50 State quarters

https://www.merriam-webster.com › dictionary › quarter

Quarter Definition & Meaning - Merriam-Webster

English Language Learners Definition of quarter · one of four equal parts of something · a unit of something (such as weight or length) that equals one fourth of ...

Google

جبن



https://www.almaany.com › dict › ar-ar · Translate this page

تعريف و معنى جبن في معجم المعاني الجامع - معجم عربي عربي

تعريف و معنى جبن في قاموس الكل. قاموس عربي عربي. جُبُنْ (المعجم القاموس المحيط). - جُبُنْ، وَجُبُنْ وَجُبُنْ: معروف. - قد ...

https://dorar.net › akhlaq › معنى-الج... · Translate this page

معنى الجبن لغةً واصطلاحًا - موسوعة الأخلاق - الدرر السنية

الجبن ضدُّ الشجاعة، تقول: جَبَنَ يَجْبُنُ وَجَبْنًا وَجَبْنًا وَجَبَانَةً، وَأَجْبَنَهُ وَجَدَهُ جَبَانًا أَوْ حَسِبَهُ إِيَّاهُ، وَجَبَانٌ مِنَ الرَّجَالِ هُوَ ضَعِيفٌ ...

https://mawdoo3.com › فوائد_الجبن... · Translate this page

فوائد الجبن وأضراره - موضوع

الجبن المسائل هو جبن كريمي ناعم ذو قوام طري، ويمتلك نكهة معتدلة، ويُستخدم بشكل شائع مع الخبز، والسكريات، والكافيه، وعادةً ما تُصنَّع من قشدة الحليب، ويمتلك ...
٥ أسئلة شائعة حول الجبن · ٤ أضرار الجبن · ٢٠ أنواع الجبن وفوائده · ١٠ الفوائد العامة للجبن



The Question is:

*How Can a Machine Understand the
Meaning of Words?*



The Answer is:

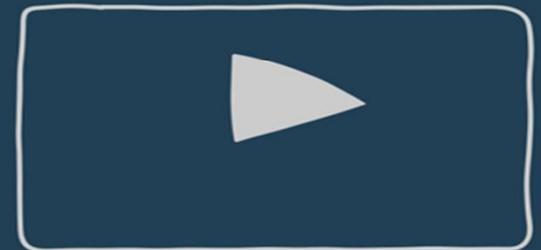
by

NLP Techniques

NEW YORK NEWS
Articles for you

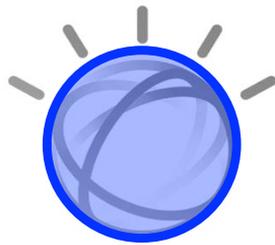


Natural Language Processing





NLP for Documents Processing



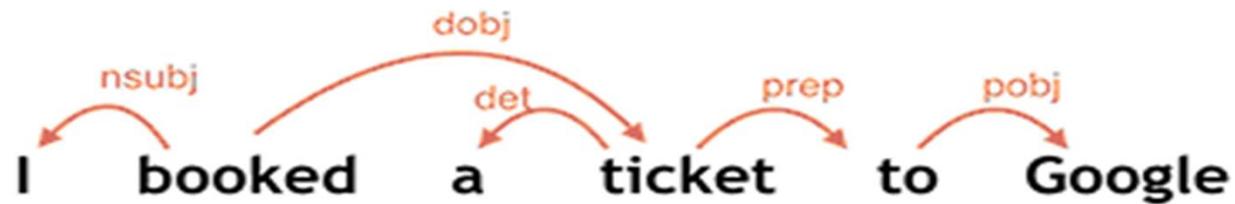
By Extracting:

- **Entites.**
- **Keywords.**
- **Concepts.**
- **Other LS.**



NLP for Resources Indexing

Dependency Parsing



Let's Try !

Barack Hussein **Obama II** is an **American politician, lawyer, and author** who served as the 44th **president** of the **United States** from 2009 to 2017. A member of the **Democratic Party**, Obama was the first African-American president of the United States.

Entities (Out of the Box Model)

Edit Text

Extraction Classification Linguistics Custom

Entities Keywords Concepts Relations

Name	Type	Confidence
Obama	Person	0.99
lawyer	JobTitle	0.91
author	JobTitle	0.70
president	JobTitle	0.97
United States	Location	0.81
Democratic Party	Organization	0.79



Now

How Can to Machine Do That's?

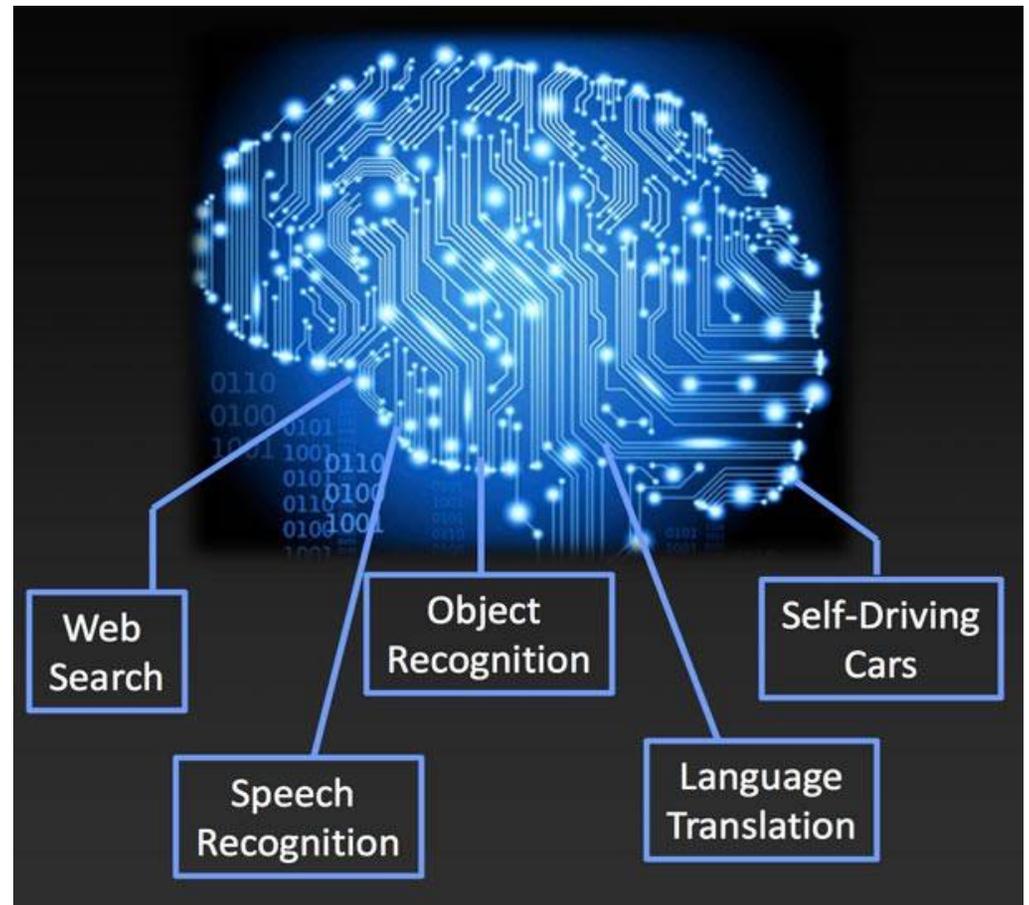


The Answer is:
by

Artificial Neural Networks



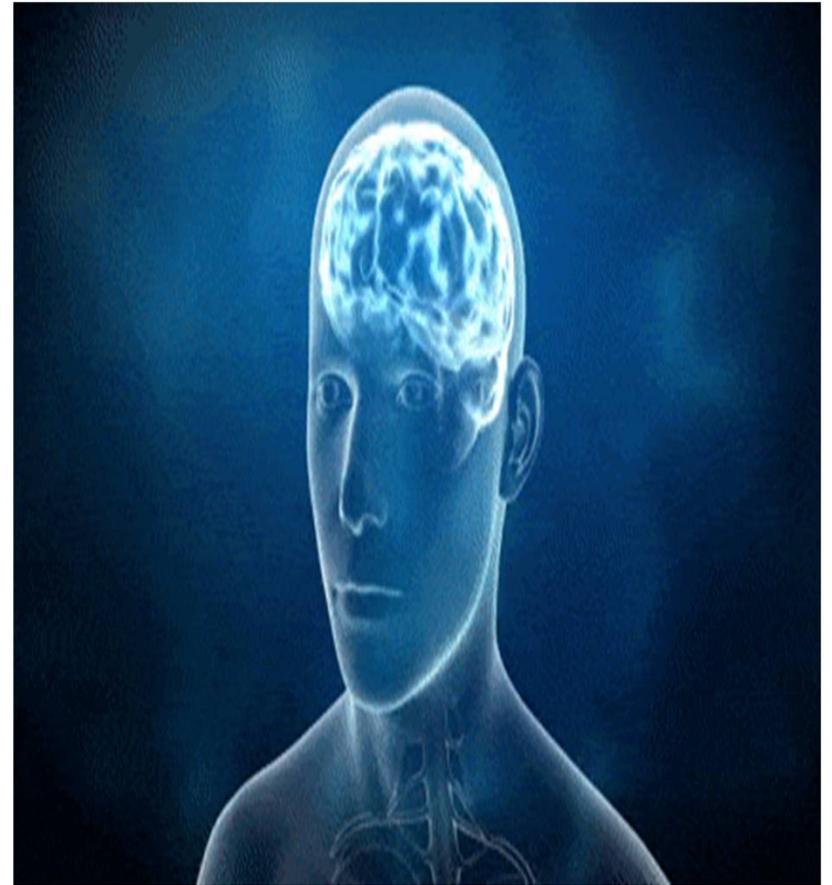
*To Understand How **Artificial** Neural Networks Works You Should First **Realize** the **Biological** Neural Networks !*





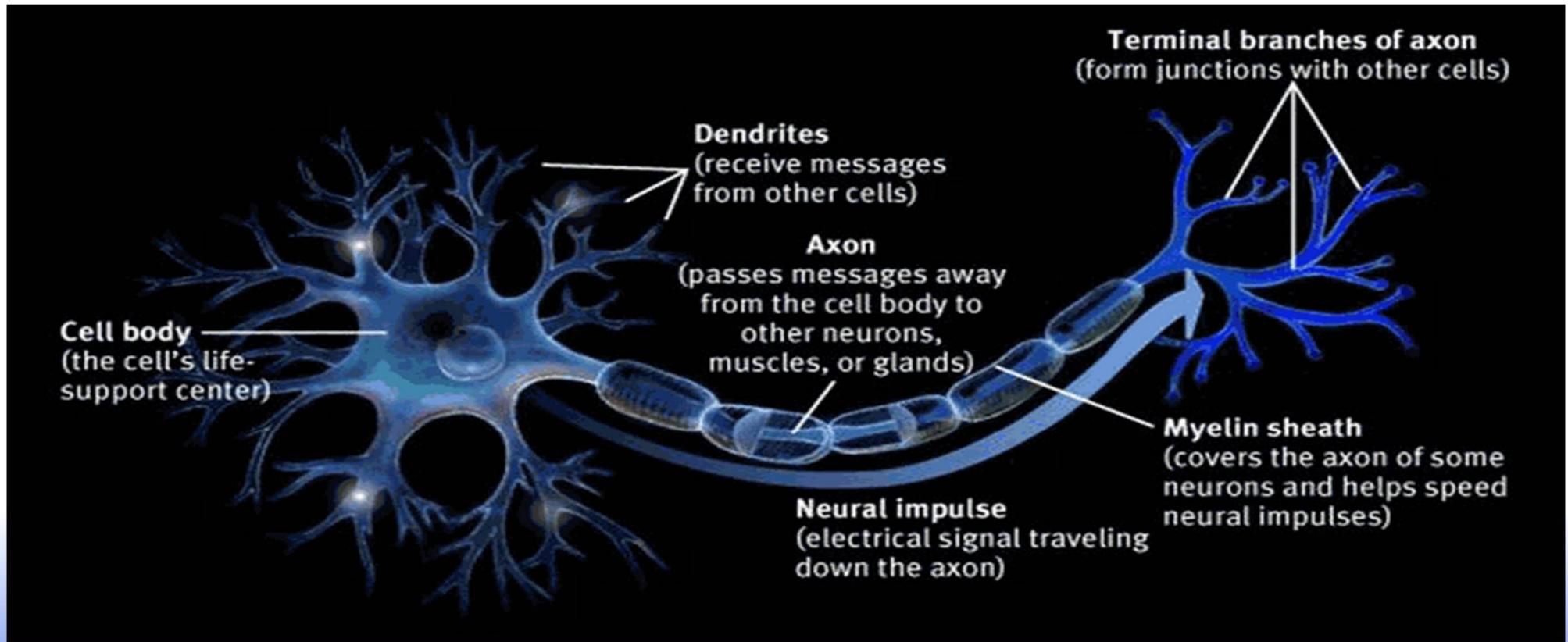
BNN

- The **Brain** is a Highly Complex, Non-linear, Parallel Information Processing System.
- It Performs Tasks Like **Pattern Recognition**, **Perception**, **Motor Control**, Many Times Faster than the **Fastest** Digital Computers.





BNN



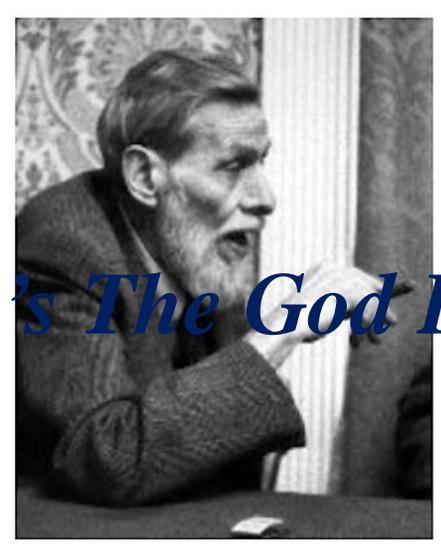


BNN

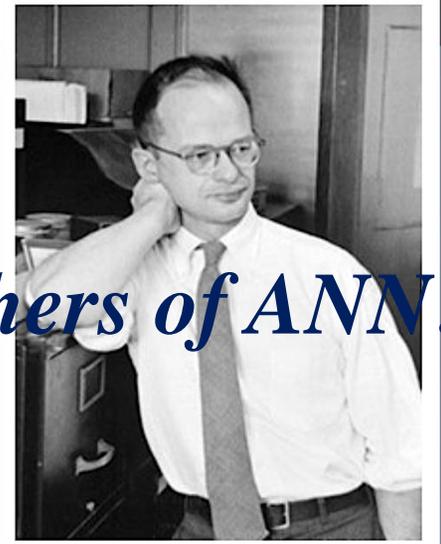
Neuron	<i>A cell of the brain and nervous system, responsible for sending signals to other cells.</i>
Dendrite:	<i>A neuron extension, which receives stimuli and transmits signals to the other neurons.</i>
Axon	<i>A long, thin structure responsible for the generation and processing of the signal in the neuron.</i>
Synapse	<i>Communication point, in which sending neurons transmit the message to receiving neurons.</i>
Weight	<i>A special tool, which enables modification of the signal.</i>



Who's The God Fathers of ANN?



Warren Sturgis McCulloch
(1898 – 1969)

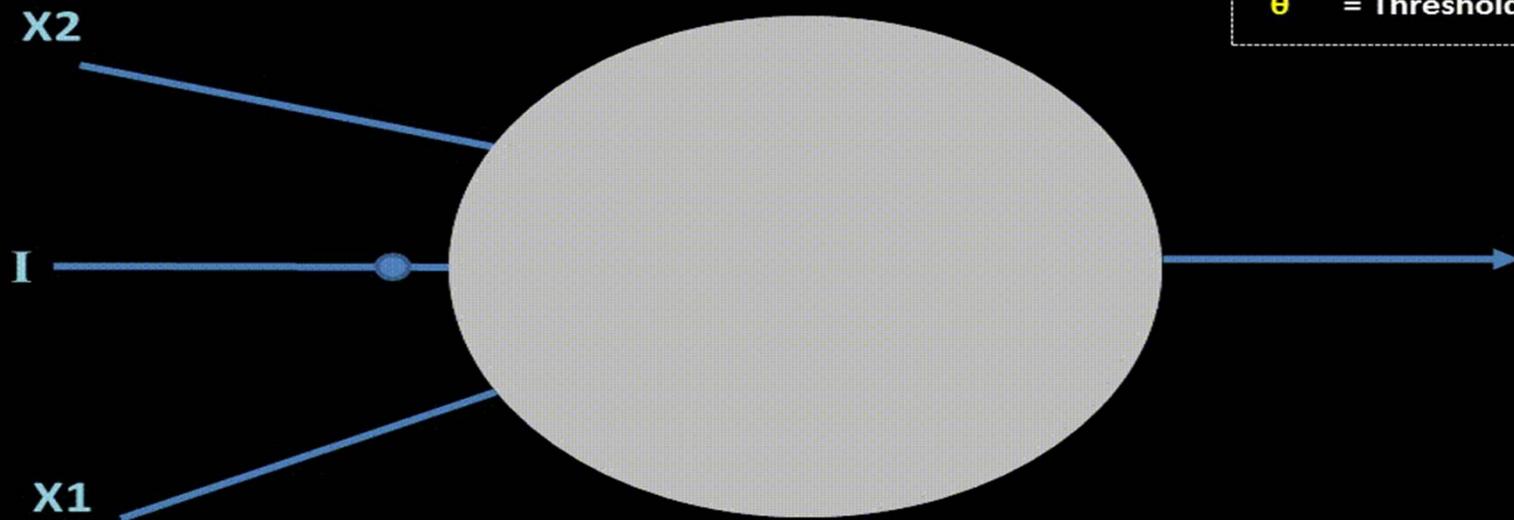


Walter Harry Pitts, Jr.
(1923 – 1969)

McCulloch-Pitt Neuron (1943)

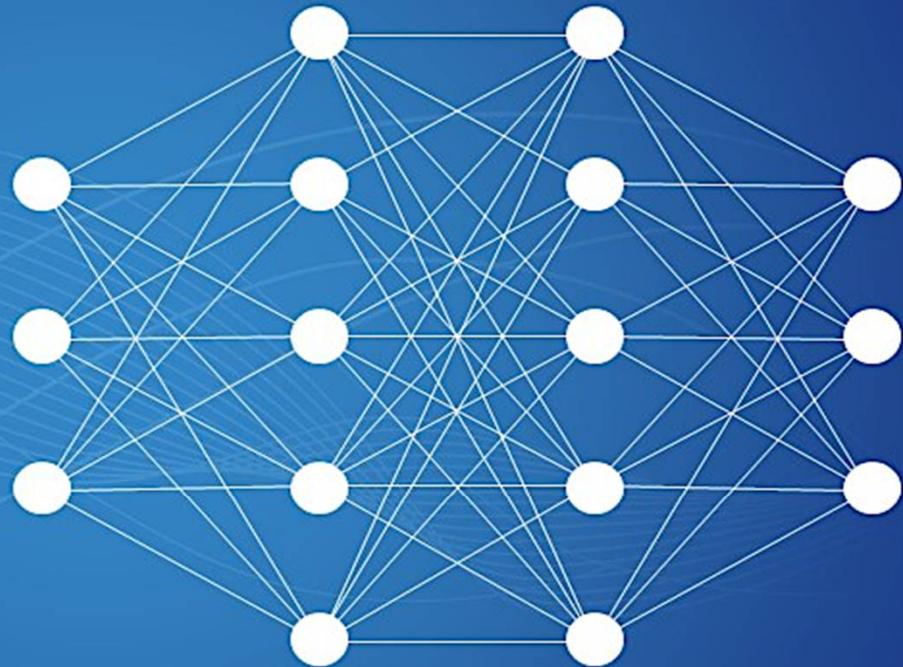


X1, X2 = Excitatory Inputs
I = Inhibitory Input
 θ = Threshold Value



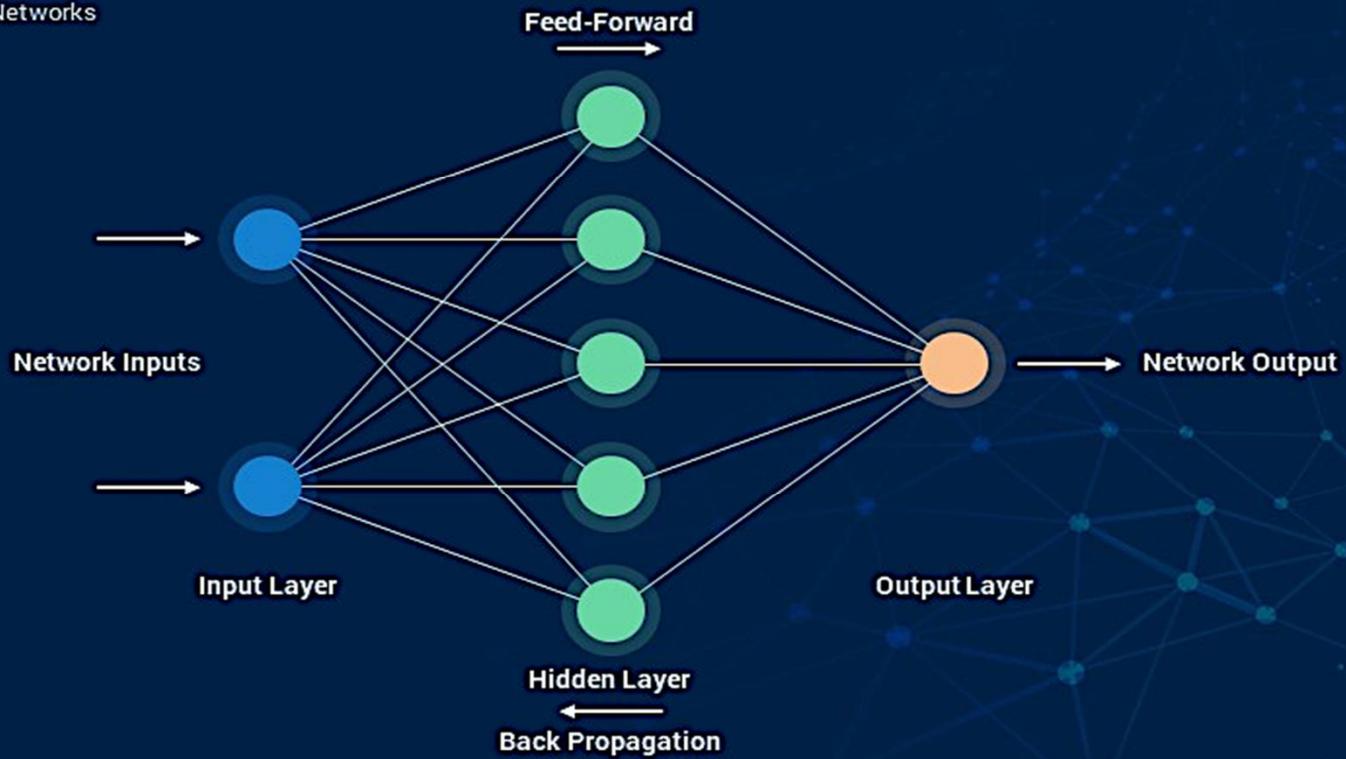
What is Artificial Neural Networks?

A neural network is a group of connected I/O units where each connection has a weight associated with its computer programs. It helps you to build predictive models from large databases. This model builds upon the human nervous system. It helps you to conduct image understanding, human learning, computer speech, etc.

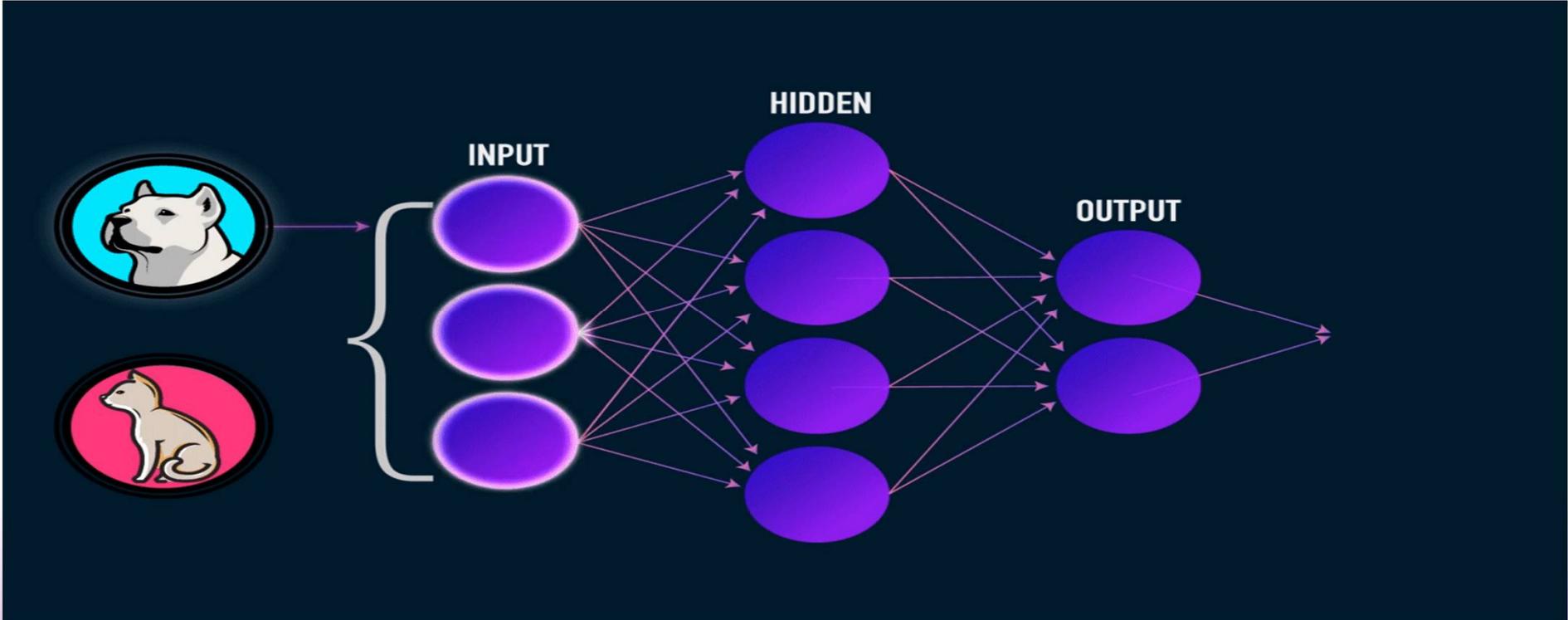


Artificial Neural Networks

Artificial Neural Networks

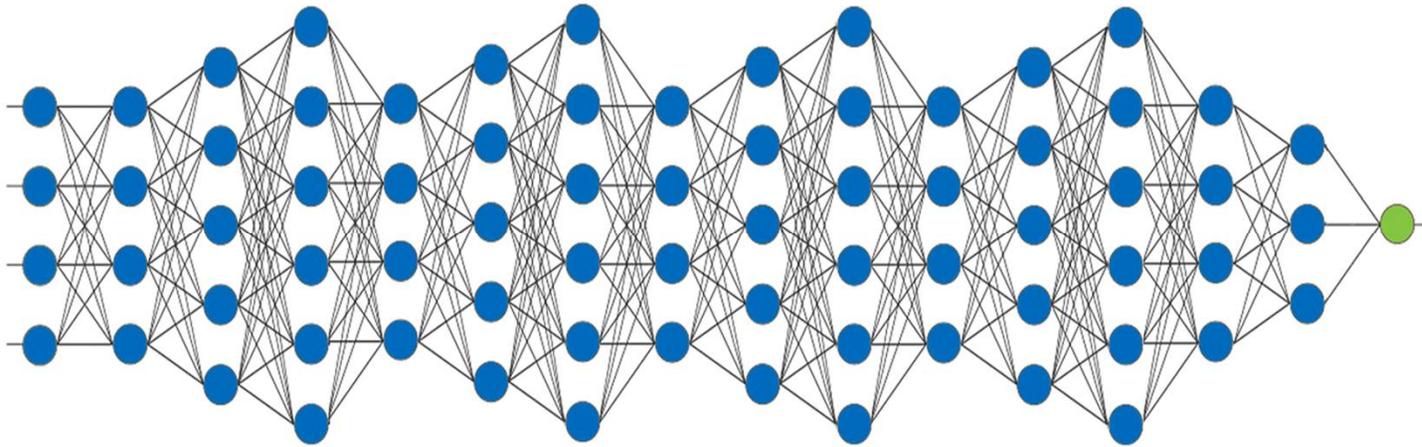


AI *Simple Hidden Layer*

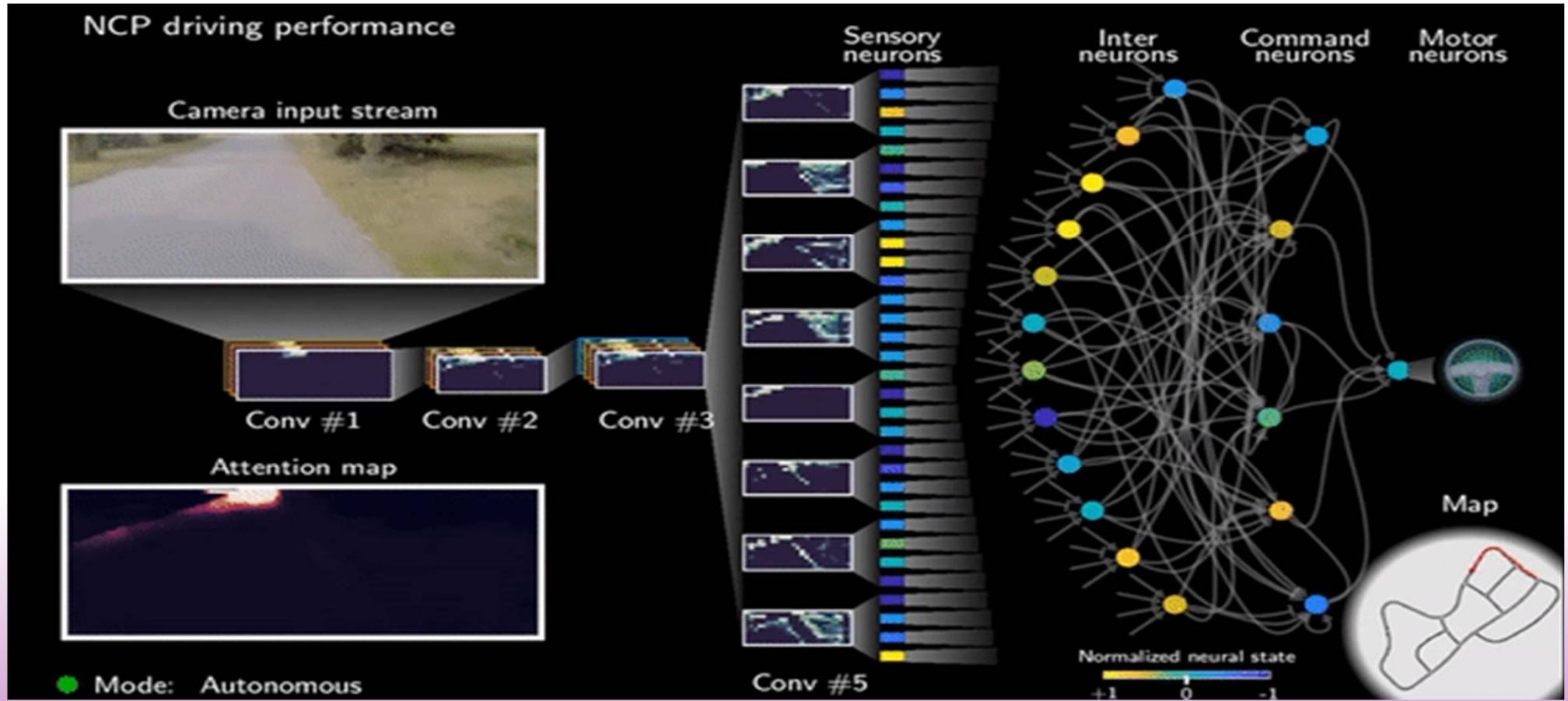




Multiple Hidden Layers



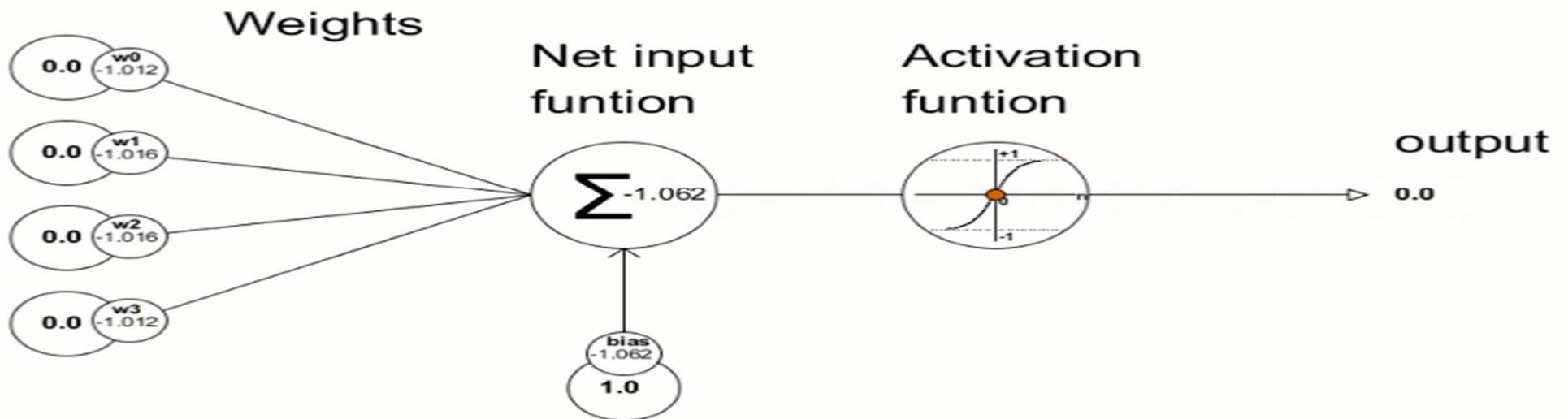
AI *Complicated Hidden Layers*



AI *What's Going on Inside It?*

*To Make an Artificial Neural Network, We Need to Use the Most Universal Language **Mathematics**.*

Inputs





ANN In Libraries in 1996 !

NEURAL NETWORKS IN LIBRARIES: the Potential of a New Information Technology

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National Library of Medicine
Bethesda, Maryland, USA

Keywords: Artificial Neural Networks, Connectionist Models, Parallel Distributed Processing, Intelligent Information Retrieval, Associative Processing, Machine Learning, Library and Information Technologies.

Abstract: Conventional library applications, including information retrieval, data-base management, expert systems and multimedia, follow the von Neumann model of computing in which sequentially executed computer programs (algorithms) operate on passive (symbolic) data in a predetermined way. Artificial Neural Networks (ANN) were born out of the difficulties in programming von Neumann computers to perform with human-like intelligence. Artificial Neural Networks represent a fundamentally different information processing paradigm better suited for the handling of perceptual and cognitive tasks that are routinely and efficiently performed by humans, yet have proved to be difficult or impossible to handle via traditional computing methods and technologies. Examples of such tasks involve associative information storage and recall, pattern recognition, common sense reasoning and learning. This paper will describe the potential of artificial neural network technology for self-organizing and adaptive information representation and retrieval, offering new and complementary capabilities for dynamic information categorization, generalization, classification, feature extraction and learning. Existing and potential neural network applications in cataloging, indexing and online searching in libraries will be discussed.

1. Introduction

Historically, even the most imaginative library automation efforts have suffered from the fundamental limitation of traditional information processing approaches, namely their inability to manifest human-like behavior, such as learning, intelligence, adaptation and self-improvement over time in response to changes in and interaction with their environment.

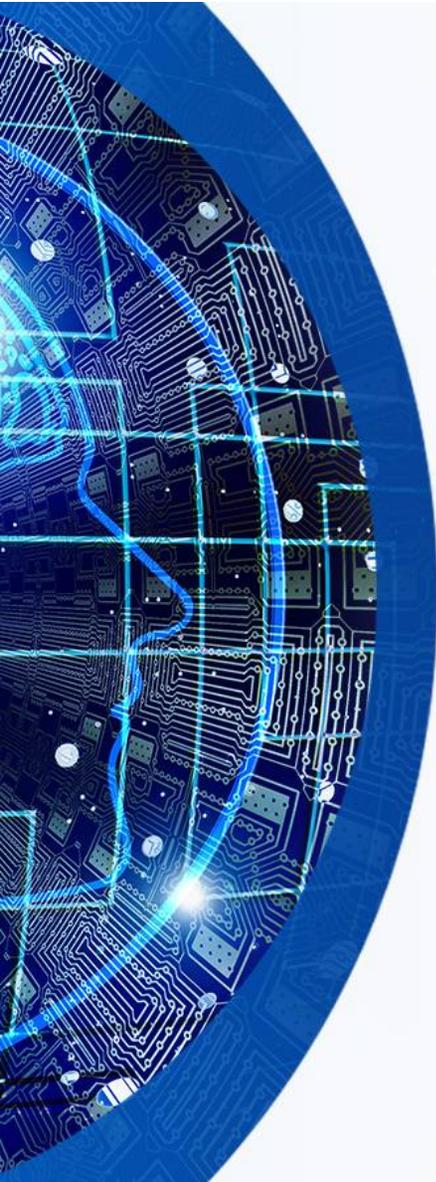
ment over time in response to changes in and interaction with their environment.

From the earliest days of computing, many researchers, from computer scientists and neurophysiologists to librarians and philosophers, have been interested in creating computers that mimic human behavior and excellence in handling perceptual and cognitive tasks that are easily accomplished by people, including young children, yet are handled clumsily, if at all, by conventional computing techniques. Familiar examples include recognizing faces, learning one's native tongue or a foreign language, and recalling complete information from fragmentary clues. Such basic capabilities have been the goal of artificial neural networks, also known as "connectionist models," and "parallel distributed processing".

In a 1990 survey, (Doszkocs, Reggia, & Lin, 1990) described emerging R & D applications of neural network technology in library settings.

2. ARTIFICIAL neural networks

Knowledge Creation



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Thanks !



Any Questions!?