

## **From Humble Beginnings to Ubiquitous Helpers: The Rise of Neural Network**

Neural networks, once a niche research pursuit, have exploded in popularity across the world. These sophisticated systems act as powerful assistants, tackling challenges that individuals might struggle with alone. Notably, teenagers and university students have embraced these AI-powered tools to access information relevant to their academic pursuits. The ever-growing demand for neural networks speaks volumes about their transformative potential, and this trend shows no signs of abating.

The history of neural networks stretches back to 1944, where researchers Warren McCulloch and Walter Pitts laid the groundwork at the University of Chicago. Despite initial skepticism from some mathematicians, neural networks remained a key research focus, later experiencing a significant resurgence in the 1980s fueled by the rise of powerful graphics processing units.

Imagine an intricate building with interconnected floors, each representing a layer in a neural network. Each "floor" houses processing units called "neurons," working together to fulfill specific tasks within the network. Let's delve into each layer:

**Ground Floor (Input Layer):** this is where raw data like images or text enters the network, unprocessed and ready for analysis.

**Hidden Floors:** these internal layers, the network's core, transform and extract valuable features from the data. Their insights remain hidden, contributing to the final output without direct exposure. The number and complexity of these hidden floors depend on the specific problem and network design.

**Top Floor (Output Layer):** here, the network delivers its final prediction based on the processed data. This prediction can take various forms, from classifying objects to generating numerical values, adapting to the task at hand.

But the true power of neural networks lies beyond their computational prowess. Their ability to analyze vast amounts of data, uncovering hidden patterns and insights in record time, makes them invaluable across various industries and fields.

Take genomics, for example. Neural networks sift through mountains of genetic data, identifying disease markers and paving the way for personalized treatments. Their impact extends beyond speed; they unlock a deeper understanding of complex biological processes.

Even the intricate world of language falls under their domain. Neural networks excel at deciphering human language, performing tasks like sentiment analysis, machine translation, and even creative text generation. Imagine businesses instantly gleaning insights from mountains of documents, emails, and social media data, all thanks to these intelligent systems.

Neural networks are more than just computational powerhouses; they are data detectives, uncovering hidden gems and fueling innovation across diverse fields. Their capabilities are constantly evolving, and it's not a stretch to say that they will play an increasingly significant role in shaping our lives in the near future. Their influence is already expanding globally, and it's safe to say that this trend will only continue to accelerate.

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