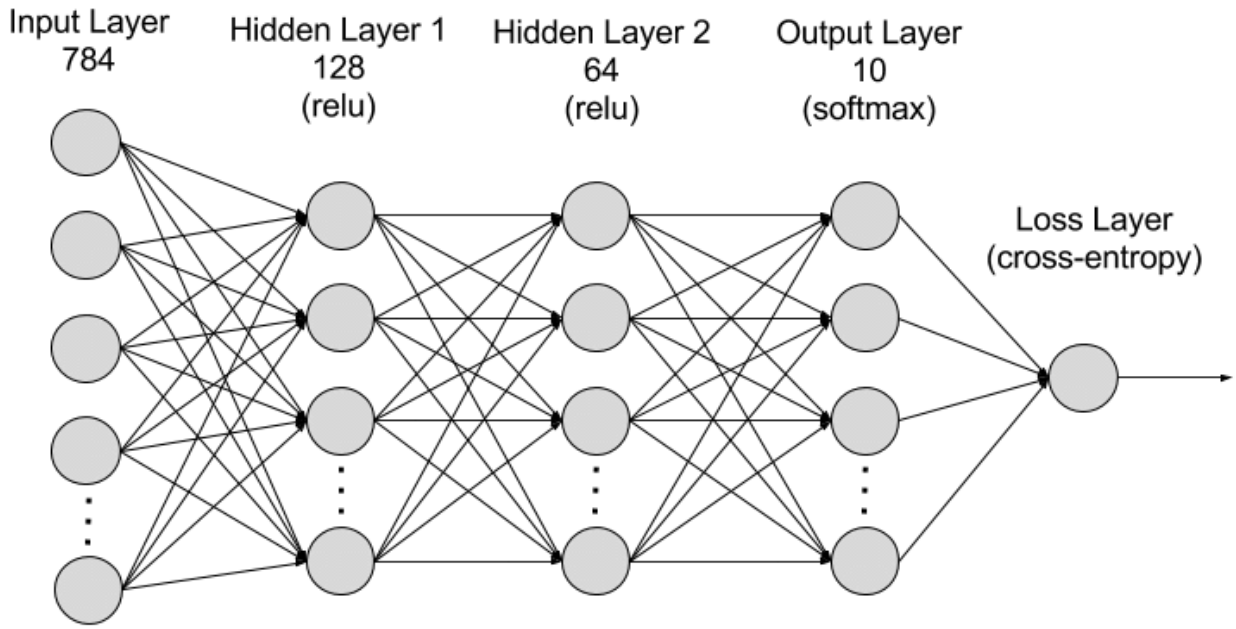
RNN

A recurrent neural network (RNN) is a deep learning model that is trained to process and convert a sequential data input into a specific sequential data output. Sequential data is data—such as words, sentences, or time-series data—where sequential components interrelate based on complex semantics and syntax rules.

An RNN is a software system that consists of many interconnected components mimicking how humans perform sequential data conversions, such as translating text from one language to another. RNNs are largely being replaced by transformer-based artificial intelligence (AI) and large language models (LLM), which are much more efficient in sequential data processing.

How does a recurrent neural network work?



What are the types of recurrent neural networks?

*One-to-many

This RNN type channels one input to several outputs. It enables linguistic applications like image captioning by generating a sentence from a single keyword.

Many-to-many*

The model uses multiple inputs to predict multiple outputs. For example, you can create a language translator with an RNN, which analyzes a sentence and correctly structures the words in a different language.

Many-to-one

Several inputs are mapped to an output. This is helpful in applications like sentiment analysis, where the model predicts customers' sentiments like *positive, negative*, and *neutral* from input testimonials.

Fonte

Amazon AWS
https://aws.amazon.com/what-is/recurrent-neural-network/