**loop ai Labs**
**COGNITIVE COMPUTING**

# HOW IT WORKS

Transforming unstructured text into structured concepts without human intervention

**Loop Q is a software and hardware platform that consists of two core components: The Loop Learning Appliance and the Loop Reasoning Appliance.**

These components use proprietary unsupervised deep learning algorithms designed to iteratively learn the language, workflows, and concepts directly from source data—without being explicitly told what to look for, or where.

## Loop Learning Appliance

**Domain-specific unsupervised learning on-premise**

The proprietary **Loop Learning Appliance** is the component of the platform that performs unsupervised deep semantic learning. Arriving to the data center as a blank slate, it's pre-configured, pre-wired with proprietary deep learning algorithms, and ready to chew through petabytes of unstructured text data without human intervention.

The Loop Learning Appliance automatically creates and updates the Loop Cortex in a way that is similar to how people learn.

The Loop Cortex is a self-learned hyper-dimensional complex model containing the expertise and knowledge needed to leverage unstructured content (dark data) around domains with specialized lingo.

The Loop Learning Appliance develops expertise from source data without human supervision, achieving mastery over the target domain at incredible speed and scale; faster than any person or group ever could.

The source data needed for the Loop learning appliance is nothing more than an unstructured dataset of any size without any special formatting -- the platform can ingest any documentation, for example, hand-written documents (OCR'ed), emails, workflows, compliance logs, reports, PDFs, or any public or private web content computing, in addition to already structured or tabular data.

Conventional computing systems are programmed using rules and dictionaries; but Loop AI Labs' cognitive computing platform Q iteratively learns the language and concepts directly from the ingested source data, without being explicitly programmed to know what and where to look.

Once the enterprise exclusive Loop Cortex is created, it can be incrementally updated with a constant flow of new unstructured information to independently adapt and to understand new concepts as they appear in the source data.

The Loop Learning Appliance is a plug-n-play high-performance computing (HPC) system consisting of hardware and software that can be quickly deployed on-premises. The physical appliance version is powered by GPUs and scales from 8,000 cores (16 Tflops) up to 90,000 cores (150 Tflops) on a single appliance. Up to eight appliances can be clustered using InfiniBand to address high-demand processing tasks.

The Loop Learning Appliance offers unprecedented performance at an accessible cost by offloading compute-intensive portions of the processing to multiple GPUs (GPGPU). The Appliance has a massively parallel architecture consisting of proprietary software designed for handling multiple tasks simultaneously on thousands of cores. From a user's perspective, the unsupervised deep semantic learning processes simply run significantly faster than any cluster of machines based on CPUs at a fraction of the cost. The Loop Learning Appliance can create a self-learned Loop Cortex hyper-dimensional model by reading and understanding millions of unstructured documents at superhuman speeds.

## Loop Reasoning Appliance

**Domain-specific unsupervised text understanding on-premise**

The **Loop Reasoning Appliance** performs real-time complex queries on the Loop Cortex model specific to each data domain to interpret and understand new unstructured data from that domain -- without requiring the help of human experts. The real-time reasoners are accessible via simple APIs.

The Loop Reasoning Appliance ingests the quantities of data that the enterprise wants to understand and returns a structured output via a collection of APIs.
The Loop Learning Appliance can be licensed on-premises as a physical or virtual appliance. It is also available as Software-as-a-Service.

We have engineered the capabilities of Loop Q to run efficiently and to perform real-time complex unstructured data analytics on IoT, mobile, and embedded devices.

**Edge Intelligence:** The Loop Reasoning Appliance is also available in an embedded version that can analyze unstructured data on smartphones, tablets, connected cars or IoT devices.

## Example Source Data

To understand the typical documents in an insurance back-office case, for helpdesk or customer support, you can use the direct files that an agent deals with daily in their workflows as training data. Insurance policies and contracts, instructional manuals, filed incident reports, receipts from submitted claim reimbursements, historical customer support tickets, in addition to employee workflow data, can all be used for the training of a Loop Cortex.