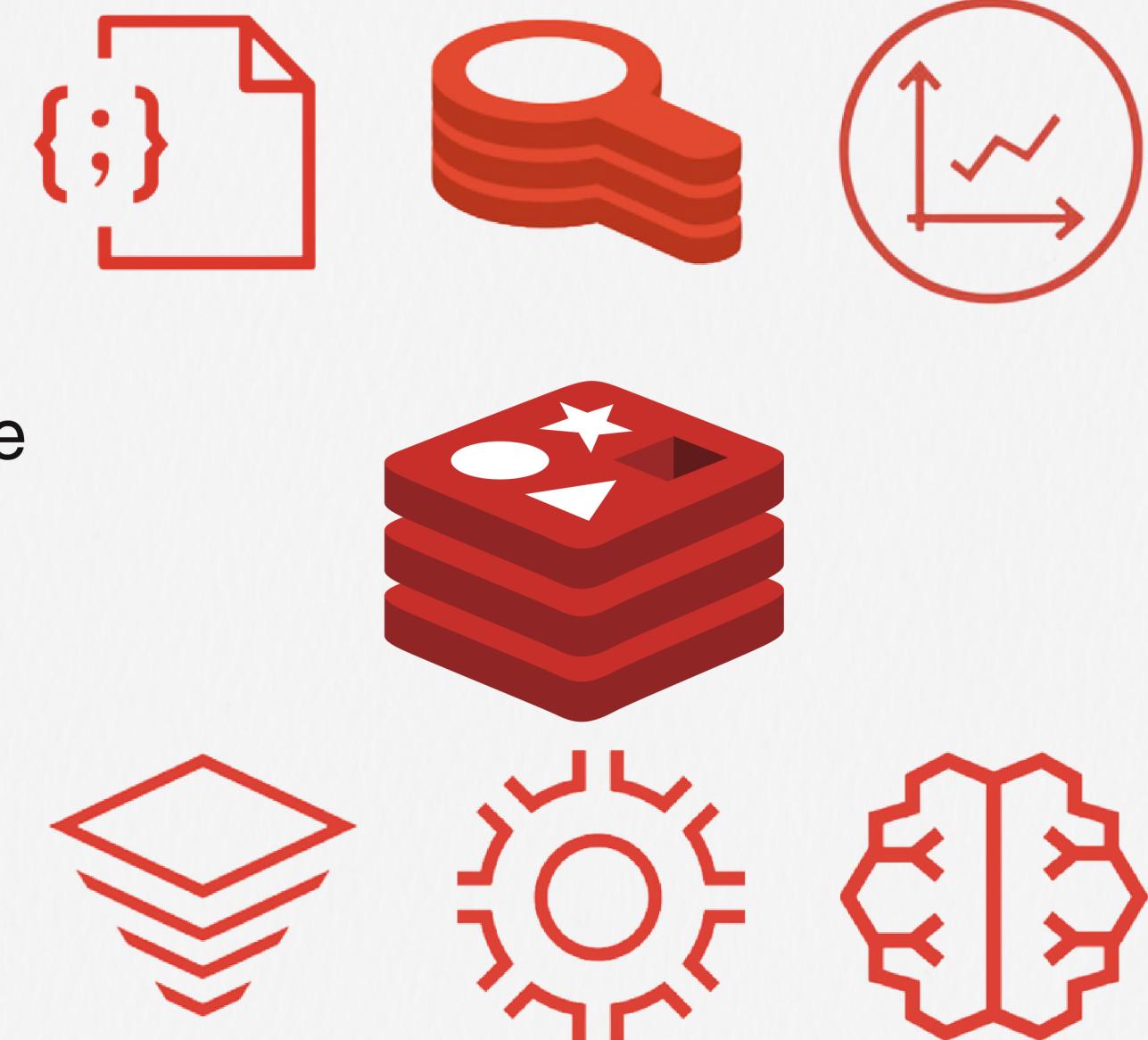


# Redis Stack

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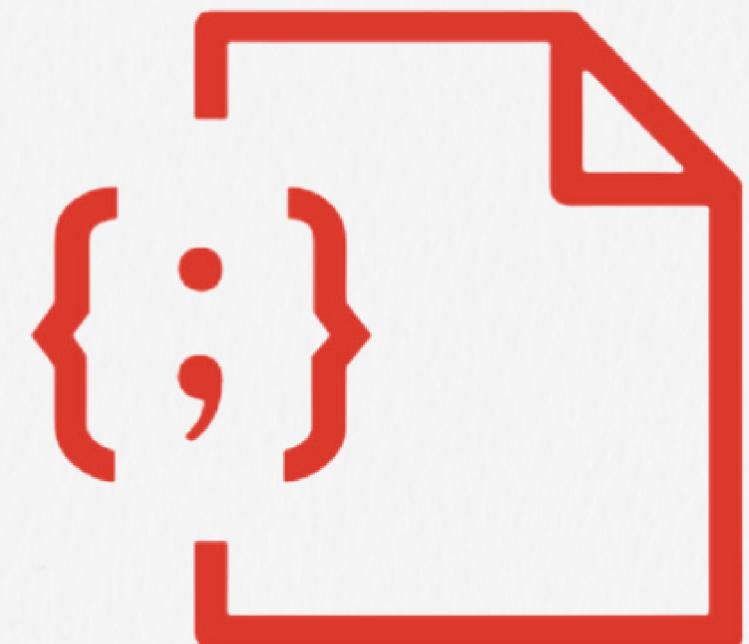
- Redis Stack **extends the functionality of Redis**
  - RedisJSON
  - RediSearch
  - RedisTimeSeries
  - RedisBloom
  - RedisGears
  - RedisAI
- Notice that it is not working in managed service
  - e.g Elasticsearch in AWS
- Redis stack works in
  - Own Redis cluster
  - Redis cluster by Redis



# RedisJSON

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- RedisJSON is a module that **adds JSON capabilities to Redis**.
- You can **store, update, and query JSON objects** directly within Redis.
- Useful for applications that require efficient manipulation of JSON formatted data, as it supports complex queries and operations directly on the JSON stored in Redis.
- With RedisJSON, you can achieve document store-like functionality, making it easier to work with modern, JSON-centric applications.



# RediSearch

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- RediSearch is a **full-text search and secondary index engine** for Redis.
- It **extends Redis with powerful search capabilities**, allowing you to index, query, and search your Redis datasets at speed.
- RediSearch **supports complex queries**, including full-text searches, aggregation, filtering, and geospatial queries.
- It's designed to **handle high volumes of data with minimal latency**, making it suitable for applications requiring real-time search features.



# RedisTimeSeries

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- RedisTimeSeries is a module **designed to efficiently store and query time series data within Redis**.
- It provides commands for creating time series, updating them with new observations, and querying data over time ranges.
- RedisTimeSeries is optimized for **time series data**, supporting downsampling, aggregation, and retention policies.
- This module is ideal for IoT, analytics, and monitoring applications where time-stamped data is continuously generated and queried.



# RedisBloom

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- RedisBloom introduces **probabilistic data structures to Redis**, including Bloom filters, Cuckoo filters, Count-Min Sketch, and others.
- These structures allow for highly efficient testing of membership and frequency estimation with a trade-off in accuracy defined by a small probability of false positives.
- RedisBloom is useful for applications where space efficiency and query speed are critical, such as caching, deduplication, and real-time analysis tasks.



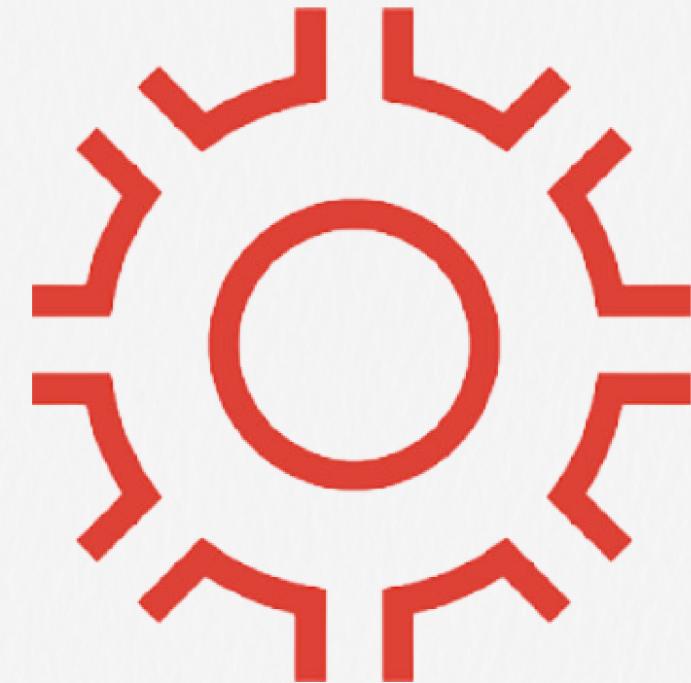
# RedisGears

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- RedisGears is a **serverless engine for transaction, batch, and event-driven data processing in Redis**.
- It supports writing and executing complex data flows that can process data across Redis' data structures.
- RedisGears is designed for flexibility and can run Python functions as well as support other languages.
- It's useful for a wide range of use cases, from real-time analytics to message queuing and stream processing.



```
1  gb = GearsBuilder()
2  gb.map(lambda x: x['value'])      # map records to "sentence" values
3  gb.flatMap(lambda x: x.split())   # split sentences to words
4  gb.countBy()                   # count each word's occurrences
5  gb.run()
```



- RedisAI is a module that brings **deep learning and machine learning model serving capabilities to Redis**.
- It provides support for popular frameworks like TensorFlow, PyTorch, and ONNX.
- With RedisAI, you can **run model inferences directly within Redis, reducing latency** by bringing compute closer to the data and enabling real-time AI applications.
- RedisAI handles model execution and management efficiently, making it easier to deploy and scale AI applications.



# How to install Redis Stack

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```
1 redis-stack:  
2   image: redis/redis-stack:latest  
3   ports:  
4     - "6379:6379"  
5     - "8001:8001"
```