# Week 5: OpenSearch Integration
## Full Stack RAG with Local LLM

Semester 2/2568

# Agenda

1. Vector Search

2. OpenSearch Client

3. Lab 4

# Vector vs Keyword Search

**Keyword (BM25):**

- Exact matching
- Fast
- Miss semantics

**Hybrid Search = Best of Both!**

**Vector Search:**

- Semantic similarity
- Understand meaning
- Find related content

# Connect to OpenSearch

```python
from opensearchpy import OpenSearch

client = OpenSearch(
    hosts=[{"host": "localhost", "port": 9200}],
    use_ssl=False
)

# Check connection
info = client.info()
```

# Create Index

```python
index_body = {
    "settings": {"index": {"knn": True}},
    "mappings": {
        "properties": {
            "content": {"type": "text"},
            "content_vector": {
                "type": "knn_vector",
                "dimension": 1024
            }
        }
    }
}
client.indices.create(index="docs", body=index_body)
```

# Lab 4: OpenSearch Integration (3.75%)

**Tasks:**

1. Connect from Python
2. Create index with vector field
3. Index sample documents
4. Implement hybrid search

**Deadline: Sunday 23:59**

# Questions? See you in Lab 4!