

| Week 6 - 7 (15th Feb - 2nd March)<br>Data Ingestion & Retrieval Augmented Generation | Chunking & Embedding Techniques   | Explore methods to break down large documents into smaller, meaningful chunks.                  |
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|  |                                   | Learn to extract and assess semantic meaning using embeddings.                                  |
|  |                                   | Study chunking techniques that maintain contextual relevancy within chunks.                     |
|  | Vector Databases & Their Working  | Understand how vector databases store and manage high-dimensional vector embeddings.            |
|  |                                   | Learn to perform similarity searches to find the closest data points in high-dimensional space. |
|  |                                   | Study indexing and retrieval methods  |
|  | Vanilla RAG                       | Learn the linear workflow of vanilla RAG. Embed, retrieve, and generate.                        |
|  |                                   | Understand the limitations of vanilla RAG.  |
|  | Two-Stage Retrieval               | Study how to use cross-encoders, for the second stage of reranking retrieved documents.         |
|  |                                   | Understand how and why two-stage retrieval improves overall search accuracy.                    |
|  | Hybrid Retrieval (Dense & Sparse) | Learn to integrate sparse and dense retrieval methods.  |
|  |                                   | Understand the different ways to achieve hybrid retrieval and results fusion.                   |
|  | Contextual Retrieval              | Learn how contextual retrieval systems understand searcher intent and query context.            |
|  |                                   | Study how to add contextual information to chunks.  |
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