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# **SPRING AI**

## **GENERATIVE ARTIFICIAL INTELLIGENCE CON JAVA**

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# RETRIEVAL AUGMENTED GENERATION

## PARTE 3 - APPROCCIO RAG ADVISOR

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- ➔ *Chatbot Ollama-HR-Venis-ITA classico e Gemini-HR-Venis-ENG con advisor*
- ⚠ *Approccio avanzato (informazione testuale estratta tramite advisor)*
  - 1 *Modifica file di configurazione RAG*
  - 2 *Modifica implementazione servizio*
  - 5 *Test delle funzionalità con Postman/Insomnia*

### Configurazione Vector Store

```
package it.venis.ai.spring.demo.config;

...

@Configuration
public class RAGConfig {

    ...

    @Bean
    RetrievalAugmentationAdvisor geminiRetrievalAugmentationAdvisor(
        @Qualifier("geminiVectorStore") VectorStore geminiVectorStore) {

        return RetrievalAugmentationAdvisor.builder()
            .documentRetriever(
                VectorStoreDocumentRetriever.builder()
                    .vectorStore(geminiVectorStore)
                    .topK(4)
                    .similarityThreshold(.2)
                    .build()
            )
            .build();
    }
}
```

## Implementazione servizio - I

```
package it.venis.ai.spring.demo.services;

...

@Service
@Configuration
public class RAGServiceImpl implements RAGService {

    ...

    private RetrievalAugmentationAdvisor geminiRetrievalAugmentationAdvisor;

    public RAGServiceImpl(
        @Qualifier("geminiChatClient") ChatClient geminiChatClient,
        @Qualifier("ollamaChatClient") ChatClient ollamaChatClient,
        @Qualifier("ollamaMemoryChatClient") ChatClient ollamaMemoryChatClient,
        @Qualifier("geminiVectorStore") VectorStore geminiVectorStore,
        @Qualifier("ollamaVectorStore") VectorStore ollamaVectorStore,
        @Qualifier("geminiRetrievalAugmentationAdvisor") RetrievalAugmentationAdvisor geminiRetrievalAugmentationAdvisor) {

        this.geminiChatClient = geminiChatClient;
        this.ollamaChatClient = ollamaChatClient;
        this.ollamaMemoryChatClient = ollamaMemoryChatClient;
        this.geminiVectorStore = geminiVectorStore;
        this.ollamaVectorStore = ollamaVectorStore;
        this.geminiRetrievalAugmentationAdvisor = geminiRetrievalAugmentationAdvisor;
    }

    @Value("${demo.rag.prompt.system.eng}")
    private Resource ragDataSystemEngPrompt;

    ...
}
```

## Implementazione servizio - II

```
...
@Override
public Answer getGeminiRAGAnswer(QuestionRequest request) {
    /*
     * This code is no longer needed, because all is handled by the logic behind the
     * geminiRetrievalAugmentationAdvisor!
     *
     * SearchRequest searchRequest = SearchRequest.builder()
     * .query(request.body().question())
     * .topK(4)
     * .similarityThreshold(.2)
     * .build();
     *
     * List<Document> similarDocs =
     * geminiVectorStore.similaritySearch(searchRequest);
     *
     * String similarDocsString = similarDocs.stream()
     * .map(Document::getText)
     * .collect(Collectors.joining(System.lineSeparator()));
     */
    ...
}
```

## Implementazione servizio - III

```
...
return new Answer(this.geminiChatClient.prompt()
    .advisors(List.of(new SimpleLoggerAdvisor(), geminiRetrievalAugmentationAdvisor))
    /*
     * The geminiRetrievalAugmentationAdvisor takes also care to create
     * a dedicated system prompt to handle the RAG strategy!
     */
    .system(s -> s.text(this.ragDataSystemEngPrompt)
    .params(Map.of("documenti", similarDocsString)))
    /*
    .user(request.body().question())
    /*
     * The template rendered is now useless, since the system prompt is
     * automatically created!
     */
    .templateRenderer(StTemplateRenderer.builder().startDelimiterToken('<')
    .endDelimiterToken('>')
    .build())
    /*
    .call()
    .content());
}
...
}
```



<https://github.com/simonescannapieco/spring-ai-advanced-dgroove-venis-code.git>  
*Branch:* 9-spring-ai-gemini-ollama-rag-advisor