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SPRING AI

GENERATIVE ARTIFICIAL INTELLIGENCE CON JAVA

Simone Scannapieco

Corso avanzato per Venis S.p.A, Venezia, Italia

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Note

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FUNCTION AS TOOL

Note

[illegible]

- Simone Scannapieco

[illegible]

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

public enum Unit {

    C,
    F;

}
```

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

import it.venis.ai.spring.demo.data.Unit;

public record WeatherRequest(String location, Unit unit) {}
```

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

import it.venis.ai.spring.demo.data.Unit;

public record TemperatureResponse(double temp, Unit unit) {}
```

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

import java.util.function.Function;

import it.venis.ai.spring.demo.data.Unit;
import it.venis.ai.spring.demo.model.WeatherRequest;
import it.venis.ai.spring.demo.model.TemperatureResponse;

public class TemperatureService implements Function<WeatherRequest, TemperatureResponse> {

    public TemperatureResponse apply(WeatherRequest request) {
        return new TemperatureResponse(30.0, Unit.C);
    }
}
```

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

...

@Configuration
public class WeatherToolsConfig {

    public static final String GET_TEMP_IN_LOCATION_FUNCTION_NAME = "getTemperatureInLocation";

    ToolCallback toolCallback = FunctionToolCallback
        .builder(GET_TEMP_IN_LOCATION_FUNCTION_NAME, new TemperatureService())
        .description("Ottieni la temperatura corrente nella località specificata.")
        .inputType(WeatherRequest.class)
        .toolMetadata(ToolMetadata.builder()
            .returnDirect(true)
            .build())
        .build();

    @Bean
    public ChatClient geminiWeatherToolsChatClient(OpenAiChatModel geminiChatModel) {

        ChatClient.Builder chatClientBuilder = ChatClient.builder(geminiChatModel);
        return chatClientBuilder
            .defaultToolCallbacks(toolCallback)
            .defaultAdvisors(List.of(new SimpleLoggerAdvisor()))
            .defaultSystem(
                """
                Sei un assistente AI di nome WeatherGeminiBot, addestrato per fornire
                informazioni meteo alle persone.
                Utilizza quando possibile il tool 'getTemperatureInLocation'.
                """)
            .build();
    }

    ...
}
```

Note

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```
...
@Bean
public ChatClient ollamaWeatherToolsChatClient(OllamaChatModel ollamaChatModel) {

    ChatClient.Builder chatClientBuilder = ChatClient.builder(ollamaChatModel);

    return chatClientBuilder
        .defaultToolCallbacks(toolCallback)
        .defaultAdvisors(List.of(new SimpleLoggerAdvisor(), new OllamaCostSavingsAdvisor()))
        .defaultSystem(
            """
            Sei un assistente AI di nome WeatherLlamaBot, addestrato per fornire
            informazioni meteo alle persone.
            """)
        .build();
}
}
```

[illegible]


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

...

@RestController
@Configuration
public class QuestionController {

    private final QuestionService service;
    private final RAGService ragService;
    private final TimeToolsService timeToolsService;

    private final ChatClient geminiWeatherToolsChatClient;
    private final ChatClient ollamaWeatherToolsChatClient;

    public QuestionController(QuestionService service,
                             RAGService ragService,
                             TimeToolsService timeToolsService,
                             @Qualifier("geminiWeatherToolsChatClient") ChatClient geminiWeatherToolsChatClient,
                             @Qualifier("ollamaWeatherToolsChatClient") ChatClient ollamaWeatherToolsChatClient) {

        this.service = service;
        this.ragService = ragService;
        this.timeToolsService = timeToolsService;
        this.geminiWeatherToolsChatClient = geminiWeatherToolsChatClient;
        this.ollamaWeatherToolsChatClient = ollamaWeatherToolsChatClient;
    }

    ...
}
```

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```

...
@PostMapping("/gemini/ask/weather-tools/temperature")
public TemperatureResponse getGeminiTemperatureToolAnswer(@RequestBody WeatherRequest request) {

    return this.geminiWeatherToolsChatClient
        .prompt()
        .call()
        .entity(TemperatureResponse.class);
}

@PostMapping("/ollama/ask/weather-tools/temperature")
public TemperatureResponse getOllamaTemperatureToolAnswer(@RequestBody WeatherRequest request) {

    return this.ollamaWeatherToolsChatClient
        .prompt()
        .call()
        .entity(TemperatureResponse.class);
}
}

```

[illegible]

Branch: 13-spring-ai-gemini-ollama-weather-tools

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