Artificial Intelligence Agents for Interacting with the GSICS Product Catalog the NOAA SCDR Database and Executing Linux Commands

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Objectives

An artificial intelligence (AI) agent refers to **a system or a program that is capable of autonomously performing tasks** on behalf of a user.

The goal of this project is to build GSICS and NOAA wide AI Agents. These AI Agents take language prompts as input and perform tasks including:

- Analyze data on the GSICS product Catalog.
- To retrieve content from NOAA SCDR database using natural language prompts
- To Generate any scdr/Linux commands and execute them on any Linux machine.

SCDR Command Generator Workflow

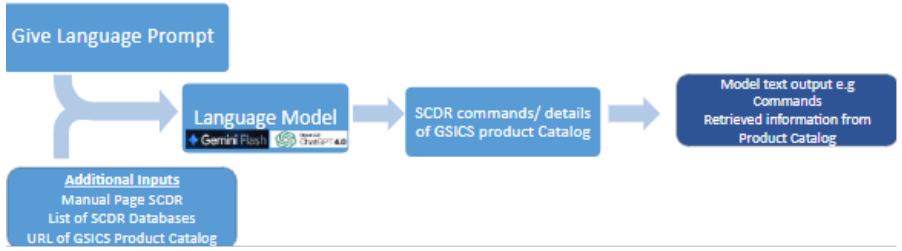

Figure Above shows the workflow of SCDR command generation.

Examples

python scdr_gemini.py "Coral Reef Watch anomaly max YTD on July 10,2025"
scdr-files-go -t CRW_SSTA_MAX_YTD_5KM --start-time "2025-07-10T00:00:00" --end-time "2025-07-10T01:00:00"

python scdr_gemini.py "Show MTG FCI data for June 1 to June 10 2024"
scdr-files-go -t MTG-FCI-L1C-L1C --start-time "2024-06-01T00:00:00" --end-time "2024-06-10T00:00:00" --satname MTI1

python scdr_gemini.py "Get GOES-18 ABI radiance data on july, 2025 between 15:15 and 15:20"
scdr-files-go -t ABI-L1B-RADF --satname GOES-18 --start-time "2025-07-01T15:15:00" --end-time "2025-07-01T15:20:00"

AI/Agent Architecture

This AI Agent that takes language prompt as input. constructs a Linux command and executes it. It useds Model Context Protocol to establish connection between LLM and Node JS which executes linux command.

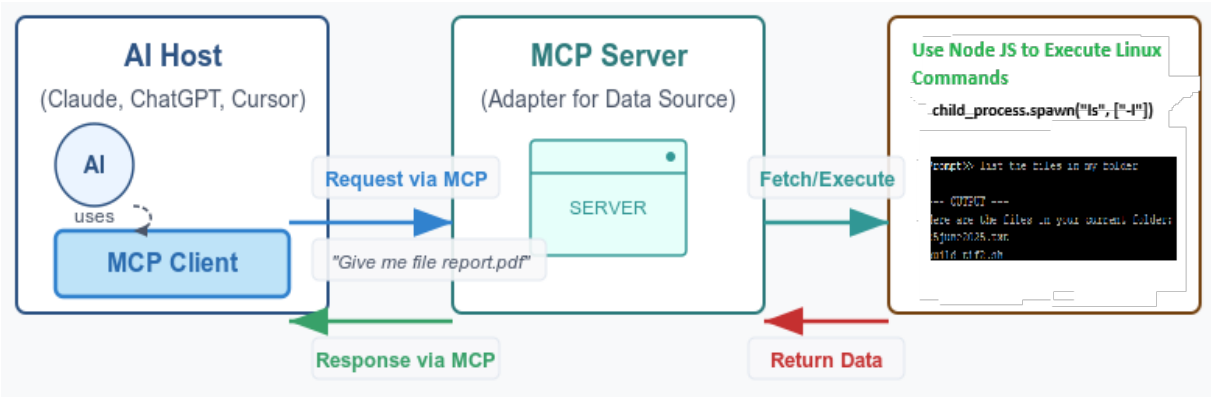

Figure Above shows the AI Agent architecture.

SCDR Command Generator – GitHub Repository

https://github.com/SFTHaider/scdr-gemini-assistant.git

Full source code, datasets, and instructions for generating NOAA SCDR commands via Gemini Flash.

Status: The code has been shared with members at NOAA and is being tested Overall 95% accuracy has been demonstrated.