HUMAN RESOURCE ASSISTANT TOOL

AGENTIC HR AUTOMATION THROUGH NATURAL LANGUAGE

Presented by Vaibhav Garg

PROBLEM STATEMENT

- Traditional HR departments are burdened with repetitive, manual tasks such as employee onboarding, leave tracking, meeting scheduling, and equipment provisioning — often requiring coordination across multiple systems and stakeholders.

- This leads to delayed processes, frequent human errors, scattered communications, and a poor employee experience — especially during onboarding or time-sensitive requests.

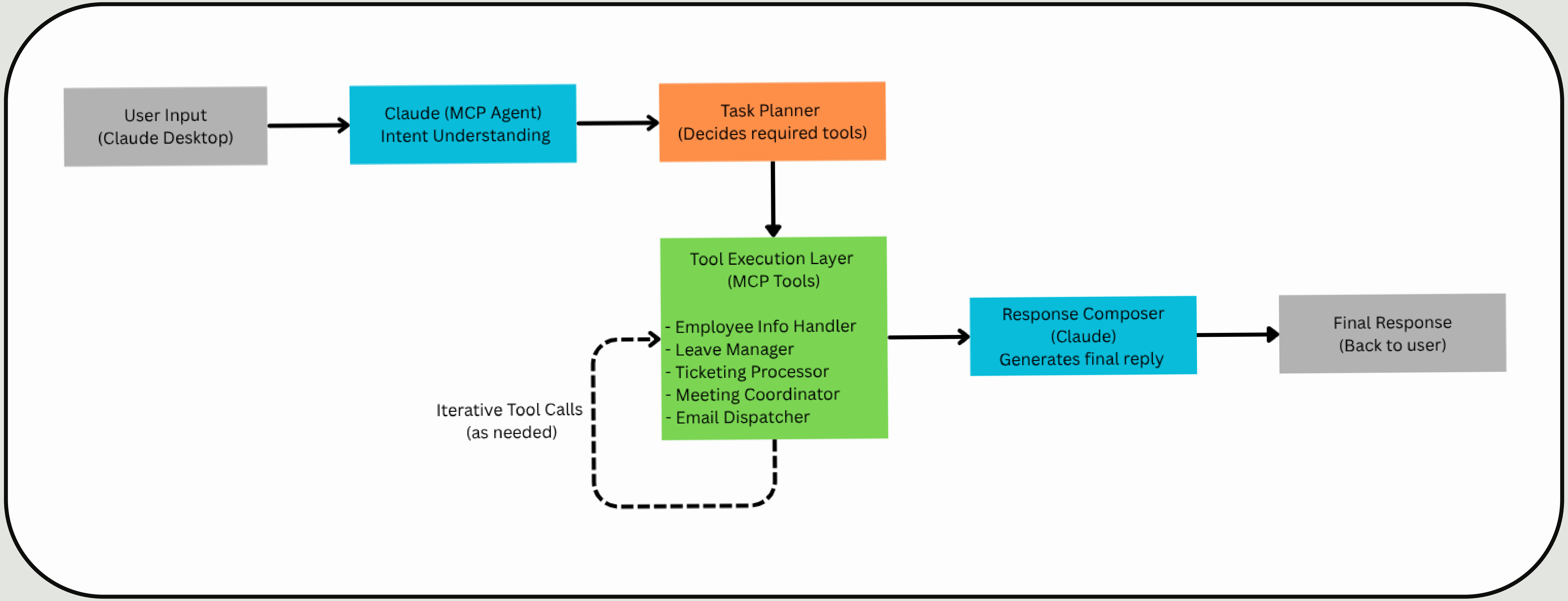
- There is an increasing demand for an intelligent, centralized assistant that can automate routine HR workflows, provide consistent communication, and support employees and managers through natural language interaction.

- An AI-powered HR assistant integrated with onboarding, leave management, ticketing, and meeting coordination can streamline HR operations, reduce overhead, and improve both efficiency and employee satisfaction.

PROJECT OBJECTIVES

- Develop an AI-powered HR assistant that automates key workflows like onboarding, leave management, meetings, and ticketing through natural language prompts.
- Seamlessly integrate with Claude Desktop via MCP tools to enable conversational and tool-based HR automation.
- Automate new employee onboarding by creating records, sending emails, generating IT tickets, and scheduling intro meetings.
- Manage employee leave requests with validation, balance tracking, and history logging through a structured interface.
- Provide a modular, extensible codebase with demo-ready seeded data and robust input validation for testing and future expansion.

SYSTEM ARCHITECTURE



User Input
(Claude Desktop)

Claude (MCP Agent)
Intent Understanding

Task Planner
(Decides required tools)

Tool Execution Layer
(MCP Tools)

- Employee Info Handler
- Leave Manager
- Ticketing Processor
- Meeting Coordinator
- Email Dispatcher

Iterative Tool Calls
(as needed)

Response Composer
(Claude)
Generates final reply

Final Response
(Back to user)

TECHNOLOGY STACK

This project integrates cutting-edge AI and lightweight web technologies to deliver a seamless and intelligent conversational experience on e-commerce platforms:

- **MCP Integration**
  - **Claude Desktop + FastMCP :** Enables conversational interaction via MCP protocol, allowing Claude to trigger Python tools for HR actions.

- **Core Logic & Automation**
  - **Python 3.10+ :** Primary language for implementing all HR workflows and logic.
  - **Pydantic :** Validates structured data schemas for requests like leave, meetings, and employee records.
  - **defaultdict & datetime :** Powers core in-memory data handling for balances, schedules, and history tracking.

- **Email Notifications**
  - **SMTP with Secure App Passwords :** Sends onboarding and manager notifications using templated emails.

- **Demo Data & Testing**
  - **Random + Date Utilities :** Used in utils.py to generate dummy employees, tickets, leaves, and meetings for interactive testing.
  - **Seed Script :** Auto-loads coherent demo data on server startup for instant usage.

- **Packaging & Execution**
  - **uv :** Fast and dependency-aware Python runner to launch the MCP server easily.
  - **pyproject.toml :** Manages dependencies and metadata for the tool environment.

FUNCTIONAL WORKFLOW:
AGENTIC HR AUTOMATION ASSISTANT

This tool-powered HR assistant automates employee onboarding, leave applications, meetings, and IT ticketing workflows using structured MCP tool calls from Claude Desktop.

1. Prompt-Based Input from Claude Desktop

- Users interact through natural language prompts in Claude Desktop.
- Claude parses user intent and selects the appropriate MCP tool.

2. Direct Tool Invocation via MCP

- Claude invokes specific tools (decorated with @mcp.tool()) directly, depending on the task:
  - add_employee, get_employee_details
  - apply_leave, get_leave_balance, get_leave_history
  - schedule_meeting, cancel_meeting, get_meetings
  - create_ticket, update_ticket_status, list_tickets
  - send_email

3. Task-Specific Business Logic

a. Employee Onboarding

- Generates the next unique employee ID.
- Adds the employee to the internal dictionary.
- Sends a welcome email with the new employee's info.
- Notifies the assigned manager via email.
- Creates IT service tickets (e.g., laptop, ID card).
- Schedules an introductory meeting using the schedule_meeting tool.

b. Leave Management

- Parses ISO-format leave dates.
- Validates leave balance and updates history.
- Returns a formatted confirmation with remaining balance.

c. Meeting Scheduling

- Stores meeting datetime and topic for each employee.
- Supports retrieval and cancellation of meetings.
- Handles optional filtering by topic.

d. Ticketing

- Accepts structured item and reason data from Claude.
- Assigns and increments ticket IDs.
- Supports ticket status updates and filtering.

4. Email Integration

- Uses a secure, SMTP-based emailer configured via .env.
- Sends welcome messages and notifications using send_email() tool.
- Supports both plain text and HTML formats.

5. Response Delivery & User Feedback

- Claude formats a natural language response based on tool outputs.
- All logic and data handling are done via Python tools; Claude acts as the front-end agent.
- All interactions happen over transport="stdio" with FastMCP.

KEY FEATURES

- **Tool-Driven Agentic Automation**
  - Leverages structured MCP tool calls instead of semantic models to execute tasks like onboarding, leave requests, meetings, and ticketing directly through Claude's interface.

- **Natural Language Interaction via Claude Desktop**
  - Users interact in plain English, and Claude converts prompts into tool calls—delivering human-like, multi-step responses through a conversational interface.

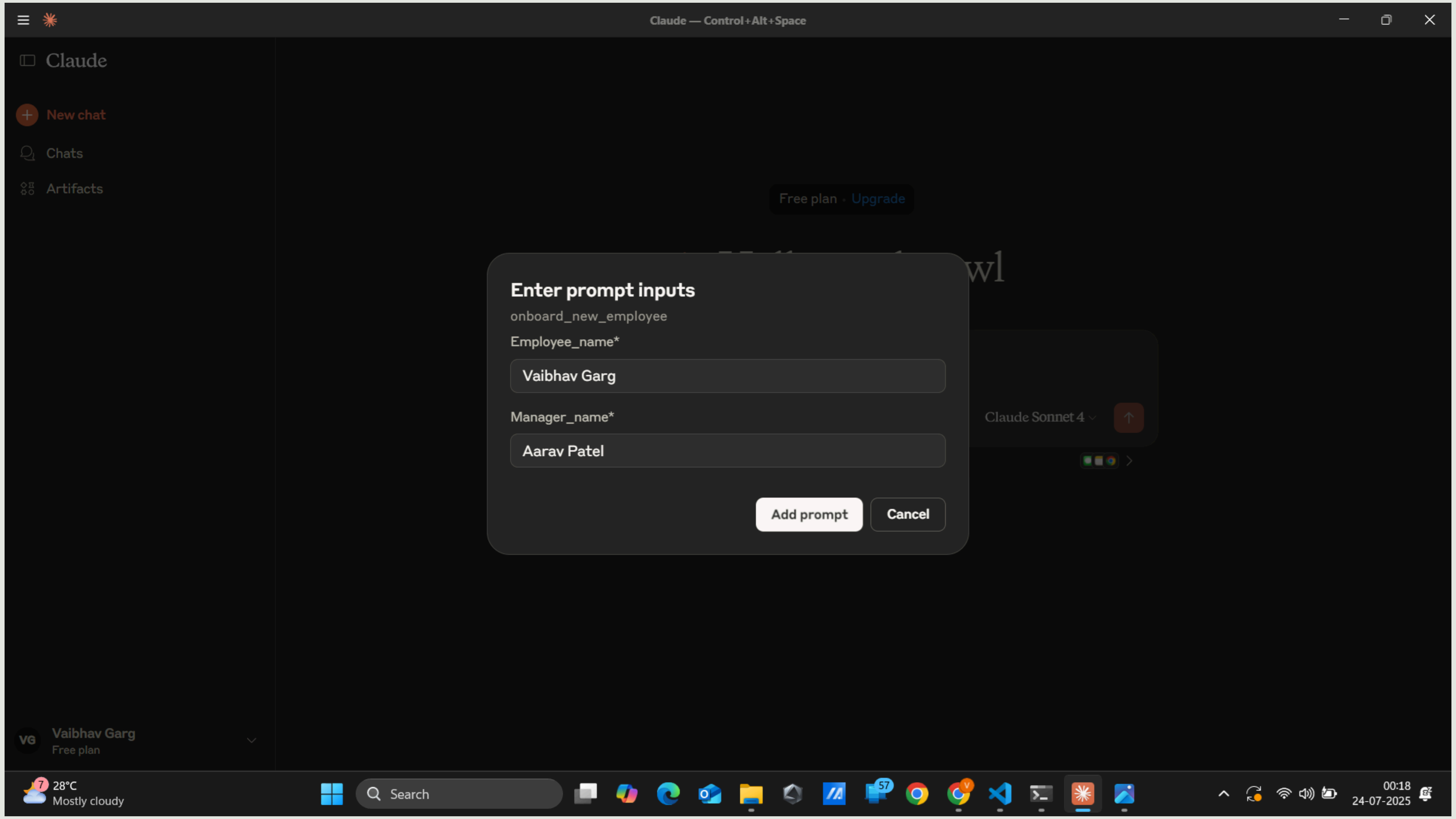
- **Seamless Employee Onboarding Workflow**
  - Automatically adds new employees, sends welcome emails, notifies managers, raises IT tickets, and schedules meetings—all triggered by a single onboarding prompt.

- **Robust Leave, Meeting & Ticket Management**
  - Includes tools to apply for leave, check balances, view history, manage meetings, and handle equipment requests—ensuring end-to-end HR task coverage.

- **Modular & Easily Extendable Codebase**
  - Designed with clean service classes, Pydantic schemas, and tool definitions, enabling quick addition of new workflows and effortless customization.

USER INTERACTION PREVIEW

PROMPT INPUT SCREEN FOR ONBOARDING IN CLAUDE DESKTOP



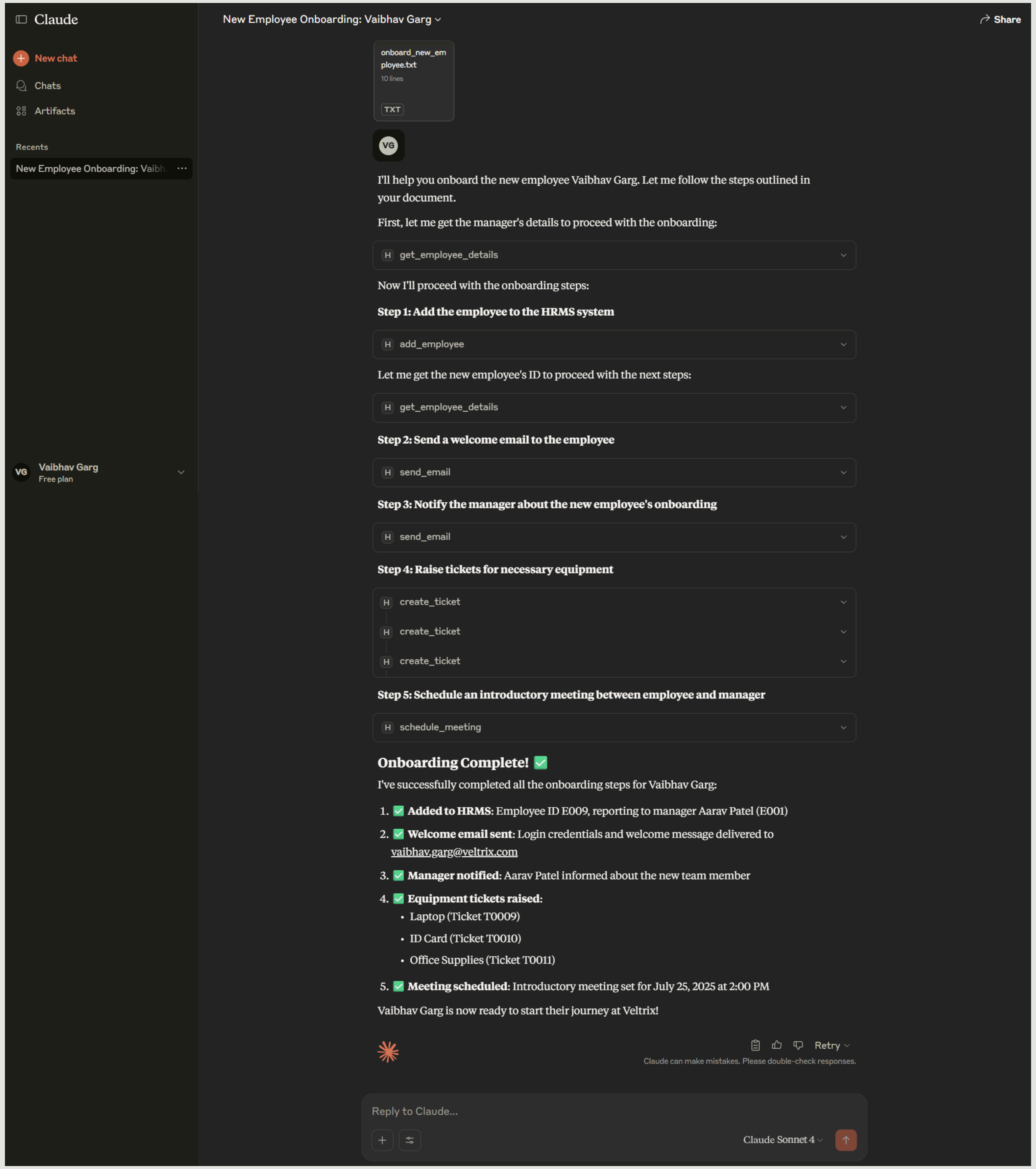
Enter prompt inputs

onboard_new_employee

Employee_name*: Vaibhav Garg

Manager_name*: Aarav Patel

EMPLOYEE ONBOARDING WORKFLOW IN CLAUDE



I'll help you onboard the new employee Vaibhav Garg. Let me follow the steps outlined in your document.

First, let me get the manager's details to proceed with the onboarding:

`get_employee_details`

Now I'll proceed with the onboarding steps:

Step 1: Add the employee to the HRMS system

`add_employee`

Let me get the new employee's ID to proceed with the next steps:

`get_employee_details`

Step 2: Send a welcome email to the employee

`send_email`

Step 3: Notify the manager about the new employee's onboarding

`send_email`

Step 4: Raise tickets for necessary equipment

`create_ticket`

`create_ticket`

`create_ticket`

Step 5: Schedule an introductory meeting between employee and manager

`schedule_meeting`

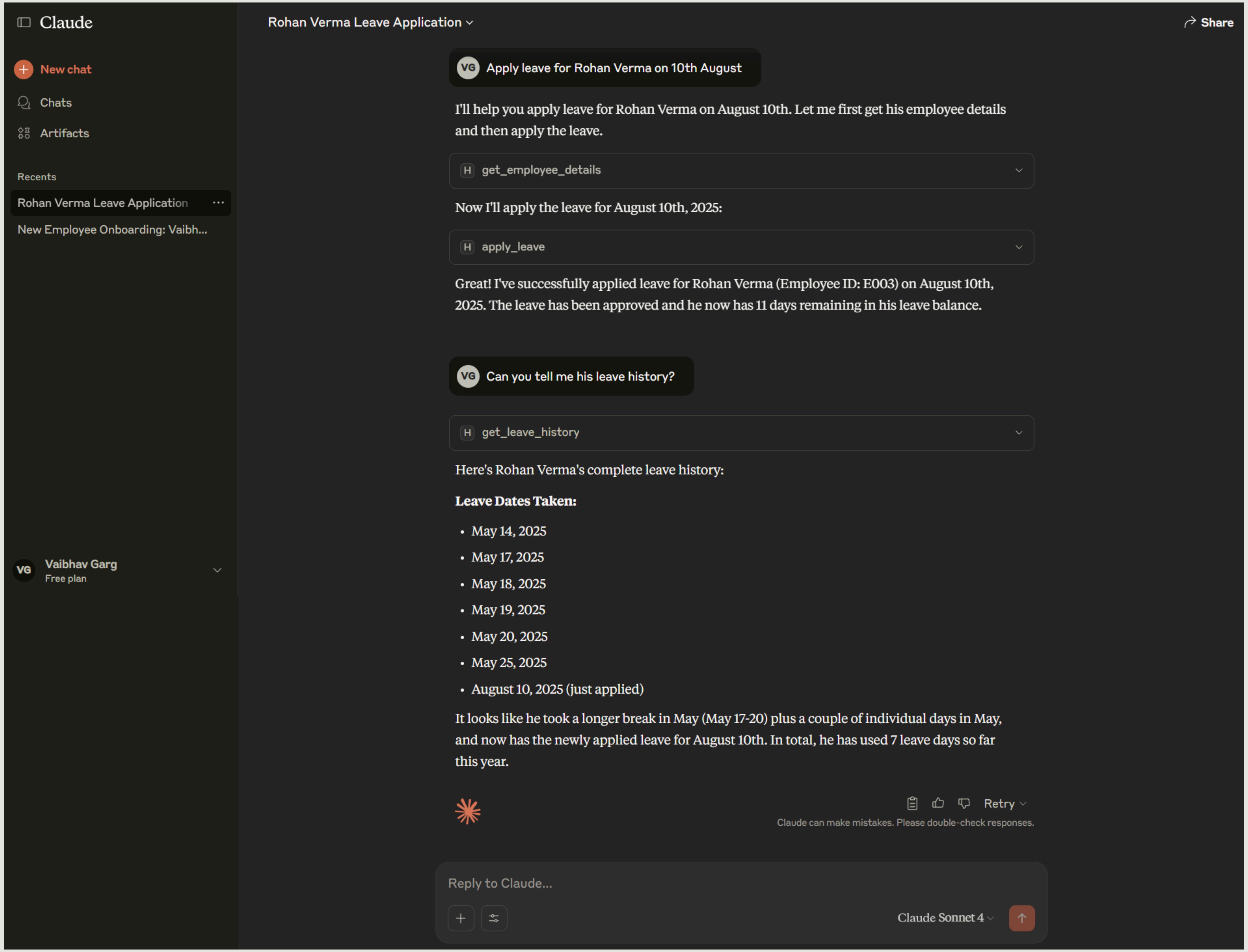
Onboarding Complete! ✅

I've successfully completed all the onboarding steps for Vaibhav Garg:

1. ✅ **Added to HRMS:** Employee ID E009, reporting to manager Aarav Patel (E001)
2. ✅ **Welcome email sent:** Login credentials and welcome message delivered to vaibhav.garg@veltrix.com
3. ✅ **Manager notified:** Aarav Patel informed about the new team member
4. ✅ **Equipment tickets raised:**
   - Laptop (Ticket T0009)
   - ID Card (Ticket T0010)
   - Office Supplies (Ticket T0011)
5. ✅ **Meeting scheduled:** Introductory meeting set for July 25, 2025 at 2:00 PM

Vaibhav Garg is now ready to start their journey at Veltrix!

LEAVE REQUEST AND HISTORY PROCESS IN CLAUDE


Claude
New chat
Chats
Artifacts
Recents
Rohan Verma Leave Application
New Employee Onboarding: Vaibh...
VG
Vaibhav Garg
Free plan
Rohan Verma Leave Application
Share
Retry
Claude can make mistakes. Please double-check responses.
Reply to Claude...
Claude Sonnet 4

VG Apply leave for Rohan Verma on 10th August

I'll help you apply leave for Rohan Verma on August 10th. Let me first get his employee details and then apply the leave.

H get_employee_details

Now I'll apply the leave for August 10th, 2025:

H apply_leave

Great! I've successfully applied leave for Rohan Verma (Employee ID: E003) on August 10th, 2025. The leave has been approved and he now has 11 days remaining in his leave balance.

VG Can you tell me his leave history?

H get_leave_history

Here's Rohan Verma's complete leave history:

Leave Dates Taken:

- May 14, 2025
- May 17, 2025
- May 18, 2025
- May 19, 2025
- May 20, 2025
- May 25, 2025
- August 10, 2025 (just applied)

It looks like he took a longer break in May (May 17-20) plus a couple of individual days in May, and now has the newly applied leave for August 10th. In total, he has used 7 leave days so far this year.

PROJECT SUMMARY

- Developed a Claude-integrated conversational HR assistant to automate key workflows like onboarding, leave tracking, ticket management, and meeting scheduling.
- Seeded the system with realistic employee data including org hierarchy, leave records, upcoming meetings, and equipment requests for testing and demos.
- Implemented modular Python classes (managers) for handling employees, meetings, tickets, and leave, exposed as tools via a FastMCP server.
- Enabled multi-step agentic flows like onboarding using @mcp.prompt, where Claude chains tools to add employees, send welcome emails, raise IT tickets, and schedule intro meetings.
- Integrated entirely within Claude Desktop using MCP — no semantic router, vector DB, or web frontend — enabling fast, natural HR interactions via prompt-based conversations.
- GitHub Repository: https://github.com/vaibhavgarg2004/Human-Resource-Assistant-Tool

Thank You