

Package ‘asa’

December 19, 2025

Title AI Search Agent for Large-Scale Research Automation

Version 0.1.0

Description Provides an LLM-powered research agent for performing AI search tasks at large scales. Uses a ReAct (Reasoning + Acting) agent pattern with web search capabilities via DuckDuckGo and Wikipedia. Implements DeepAgent-style memory folding for context management. The agent is built on 'LangGraph' and supports multiple LLM backends including 'OpenAI', 'Groq', and 'xAI'.

URL <https://github.com/cjerzak/asa-software>

BugReports <https://github.com/cjerzak/asa-software/issues>

Depends R (>= 4.0.0)

License GPL-3

Encoding UTF-8

Imports reticulate (>= 1.28), jsonlite, rlang

Suggests testthat (>= 3.0.0), knitr, rmarkdown, future, future.apply,
dplyr

VignetteBuilder knitr

RoxygenNote 7.3.3

Config/testthat.edition 3

SystemRequirements Python (>= 3.11), Conda, Tor (optional, for
anonymous searching)

NeedsCompilation no

Author Connor Jerzak [aut, cre] (ORCID:
<<https://orcid.org/0000-0003-1914-8905>>)

Maintainer Connor Jerzak <connor.jerzak@gmail.com>

Contents

asa-package	3
.build_trace	3
.close_http_clients	4
.create_agent	4
.create_http_clients	5
.create_llm	5
.create_tools	5

.extract_fields	6
.extract_json_from_trace	6
.extract_json_object	6
.extract_response_text	7
.get_extdata_path	7
.get_local_ip	7
.get_python_path	8
.handle_response_issues	8
.import_python_packages	8
.invoke_memory_folding_agent	8
.invoke_standard_agent	9
.is_initialized	9
.parse_json_response	9
as.data.frame.asa_result	10
asa_agent	10
asa_response	11
asa_result	11
build_backend	12
build_prompt	13
check_backend	14
clean_whitespace	14
configure_search	15
configure_search_logging	16
decode_html	17
extract_agent_results	17
extract_search_snippets	18
extract_urls	18
extract_wikipedia_content	19
format_duration	19
get_agent	20
get_tor_ip	20
initialize_agent	21
is_tor_running	23
json_escape	23
print.asa_agent	24
print.asa_response	24
print.asa_result	25
print2	25
process_outputs	26
reset_agent	26
rotate_tor_circuit	27
run_agent	27
run_agent_batch	28
run_task	29
run_task_batch	30
safe_json_parse	31
summary.asa_agent	32
summary.asa_response	32
summary.asa_result	33
truncate_string	33

Description

The `asa` package provides an LLM-powered research agent for performing AI search tasks at large scales using web search capabilities.

The agent uses a ReAct (Reasoning + Acting) pattern implemented via LangGraph, with tools for searching DuckDuckGo and Wikipedia. It supports multiple LLM backends (OpenAI, Groq, xAI) and implements DeepAgent-style memory folding for managing long conversations.

Main Functions

- `build_backend`: Set up the Python conda environment
- `initialize_agent`: Initialize the search agent
- `run_agent`: Run the agent with a custom prompt
- `run_task`: Run a structured task with the agent
- `run_task_batch`: Run multiple tasks in batch

Configuration

The package requires a Python environment with LangChain and related packages. Use `build_backend` to create this environment automatically.

For anonymous searching, the package can use Tor as a SOCKS5 proxy. Install Tor via `brew install tor` (macOS) and start it with `brew services start tor`.

Author(s)

Maintainer: Connor Jerzak <connor.jerzak@gmail.com> ([ORCID](#))

See Also

Useful links:

- <https://github.com/cjerzak/asa-software>
- Report bugs at <https://github.com/cjerzak/asa-software/issues>

Description

Build Trace from Raw Response

Usage

```
.build_trace(raw_response)
```

`.close_http_clients` *Close HTTP Clients*

Description

Safely closes any open httpx clients to prevent resource leaks. This is called automatically by `reset_agent()` and when reinitializing.

Usage

```
.close_http_clients()
```

Value

Invisibly returns NULL

`.create_agent` *Create the LangGraph Agent*

Description

Create the LangGraph Agent

Usage

```
.create_agent(
    llm,
    tools,
    use_memory_folding,
    memory_threshold,
    memory_keep_recent
)
```

Arguments

<code>llm</code>	LLM instance
<code>tools</code>	List of tools
<code>use_memory_folding</code>	Whether to use memory folding
<code>memory_threshold</code>	Messages before folding
<code>memory_keep_recent</code>	Messages to keep

.create_http_clients *Create HTTP Clients for API Calls*

Description

Create HTTP Clients for API Calls

Usage

.create_http_clients(proxy, timeout)

Arguments

proxy	Proxy URL or NULL
timeout	Timeout in seconds

.create_llm *Create LLM Instance*

Description

Create LLM Instance

Usage

.create_llm(backend, model, clients, rate_limit)

Arguments

backend	Backend name
model	Model identifier
clients	HTTP clients (for OpenAI)
rate_limit	Requests per second

.create_tools *Create Search Tools*

Description

Create Search Tools

Usage

.create_tools(proxy)

Arguments

proxy	Proxy URL or NULL
-------	-------------------

.extract_fields *Extract Specific Fields from Response*

Description

Extract Specific Fields from Response

Usage

```
.extract_fields(text, fields)
```

Arguments

text	Response text
fields	Character vector of field names to extract

.extract_json_from_trace *Extract JSON from Agent Traces*

Description

Internal function to extract JSON data from raw agent traces.

Usage

```
.extract_json_from_trace(text)
```

Arguments

text	Raw trace text
------	----------------

Value

Parsed JSON data as a list, or NULL if no JSON found

.extract_json_object *Extract JSON Object from Text*

Description

Extract JSON Object from Text

Usage

```
.extract_json_object(text)
```

Arguments

text	Response text
------	---------------

.extract_response_text

Extract Response Text from Raw Response

Description

Extract Response Text from Raw Response

Usage

.extract_response_text(raw_response, backend)

.get_extdata_path

Get External Data Path

Description

Returns the path to the package's external data directory.

Usage

.get_extdata_path(filename = NULL)

Arguments

filename Optional filename within extdata directory

Value

Character string with the path

.get_local_ip

Get Local IP Address (Cross-Platform)

Description

Returns the local IP address for use with Exo backend. Works on Windows, macOS, and Linux.

Usage

.get_local_ip()

Value

Character string with the local IP address, or "127.0.0.1" on failure.

.get_python_path *Get Package Python Module Path*

Description

Returns the path to the Python modules shipped with the package.

Usage

```
.get_python_path()
```

Value

Character string with the path to inst/python

.handle_response_issues
 Handle Response Issues (Rate Limiting, Timeouts)

Description

Handle Response Issues (Rate Limiting, Timeouts)

Usage

```
.handle_response_issues(trace, verbose)
```

.import_python_packages
 Import Required Python Packages

Description

Import Required Python Packages

Usage

```
.import_python_packages()
```

.invoke_memory_folding_agent
 Invoke Memory Folding Agent

Description

Invoke Memory Folding Agent

Usage

```
.invoke_memory_folding_agent(python_agent, prompt, recursion_limit)
```

.invoke_standard_agent
Invoke Standard Agent

Description

Invoke Standard Agent

Usage

.invoke_standard_agent(python_agent, prompt, recursion_limit)

.is_initialized *Check if ASA Agent is Initialized*

Description

Check if ASA Agent is Initialized

Usage

.is_initialized()

Value

Logical indicating if the agent has been initialized

.parse_json_response *Parse JSON Response*

Description

Parse JSON Response

Usage

.parse_json_response(response_text)

Arguments

response_text Response text from agent

`as.data.frame.asa_result`
Convert asa_result to Data Frame

Description

Convert asa_result to Data Frame

Usage

```
## S3 method for class 'asa_result'
as.data.frame(x, ...)
```

Arguments

<code>x</code>	An asa_result object
<code>...</code>	Additional arguments (ignored)

Value

A single-row data frame

`asa_agent` *Constructor for asa_agent Objects*

Description

Creates an S3 object representing an initialized ASA search agent.

Usage

```
asa_agent(python_agent, backend, model, config)
```

Arguments

<code>python_agent</code>	The underlying Python agent object
<code>backend</code>	LLM backend name (e.g., "openai", "groq")
<code>model</code>	Model identifier
<code>config</code>	Agent configuration list

Value

An object of class `asa_agent`

asa_response*Constructor for asa_response Objects*

Description

Creates an S3 object representing an agent response.

Usage

```
asa_response(  
    message,  
    status_code,  
    raw_response,  
    trace,  
    elapsed_time,  
    fold_count,  
    prompt  
)
```

Arguments

message	The final response text
status_code	Status code (200 = success, 100 = error)
raw_response	The full Python response object
trace	Full text trace of agent execution
elapsed_time	Execution time in minutes
fold_count	Number of memory folds performed
prompt	The original prompt

Value

An object of class `asa_response`

asa_result*Constructor for asa_result Objects*

Description

Creates an S3 object representing the result of a research task.

Usage

```
asa_result(prompt, message, parsed, raw_output, elapsed_time, status)
```

Arguments

<code>prompt</code>	The original prompt
<code>message</code>	The agent's response text
<code>parsed</code>	Parsed output (list or NULL)
<code>raw_output</code>	Full agent trace
<code>elapsed_time</code>	Execution time in minutes
<code>status</code>	Status ("success" or "error")

Value

An object of class `asa_result`

<code>build_backend</code>	<i>Build the Python Backend Environment</i>
----------------------------	---

Description

Creates a conda environment with all required Python dependencies for the asa search agent, including LangChain, LangGraph, and search tools.

Usage

```
build_backend(conda_env = "asa_env", conda = "auto", python_version = "3.13")
```

Arguments

<code>conda_env</code>	Name of the conda environment (default: "asa_env")
<code>conda</code>	Path to conda executable (default: "auto")
<code>python_version</code>	Python version to use (default: "3.13")

Details

This function creates a new conda environment and installs the following Python packages:

- `langchain_groq`, `langchain_community`, `langchain_openai`
- `langgraph`
- `ddgs` (DuckDuckGo search)
- `selenium`, `primp` (browser automation)
- `beautifulsoup4`, `requests`
- `fake_headers`, `httpx`
- `pysocks`, `socksio` (proxy support)

Value

Invisibly returns NULL; called for side effects.

Examples

```
## Not run:  
# Create the default environment  
build_backend()  
  
# Create with a custom name  
build_backend(conda_env = "my_asa_env")  
  
## End(Not run)
```

build_prompt

Build a Task Prompt from Template

Description

Creates a formatted prompt by substituting variables into a template.

Usage

```
build_prompt(template, ...)
```

Arguments

template	A character string with placeholders in the form {variable_name}
...	Named arguments to substitute into the template

Value

A formatted prompt string

Examples

```
## Not run:  
prompt <- build_prompt(  
  template = "Find information about {{name}} in {{country}} during {{year}}",  
  name = "Marie Curie",  
  country = "France",  
  year = 1903  
)  
  
## End(Not run)
```

check_backend	<i>Check Python Environment Availability</i>
---------------	--

Description

Checks if the required Python environment and packages are available.

Usage

```
check_backend(conda_env = "asa_env")
```

Arguments

conda_env	Name of the conda environment to check
-----------	--

Value

A list with components:

- available: Logical, TRUE if environment is ready
- conda_env: Name of the environment checked
- python_version: Python version if available
- missing_packages: Character vector of missing packages (if any)

Examples

```
## Not run:
status <- check_backend()
if (!status$available) {
  build_backend()
}

## End(Not run)
```

clean_whitespace	<i>Clean Whitespace</i>
------------------	-------------------------

Description

Normalizes whitespace in a string by collapsing multiple spaces and trimming leading/trailing whitespace.

Usage

```
clean_whitespace(x)
```

Arguments

x	Character string
---	------------------

Value

Cleaned string

configure_search	<i>Configure Python Search Parameters</i>
------------------	---

Description

Sets global configuration values for the Python search module. These values control timeouts, retry behavior, and result limits.

Usage

```
configure_search(  
    max_results = NULL,  
    timeout = NULL,  
    max_retries = NULL,  
    retry_delay = NULL,  
    backoff_multiplier = NULL,  
    captcha_backoff_base = NULL,  
    page_load_wait = NULL,  
    conda_env = "asa_env"  
)
```

Arguments

max_results	Maximum number of search results to return (default: 10)
timeout	HTTP request timeout in seconds (default: 15)
max_retries	Maximum retry attempts on failure (default: 3)
retry_delay	Initial delay between retries in seconds (default: 2)
backoff_multiplier	Multiplier for exponential backoff (default: 1.5)
captcha_backoff_base	Base multiplier for CAPTCHA backoff (default: 3)
page_load_wait	Wait time after page load in seconds (default: 2)
conda_env	Name of the conda environment (default: "asa_env")

Value

Invisibly returns a list with the current configuration

Examples

```
## Not run:  
# Increase timeout for slow connections  
configure_search(timeout = 30, max_retries = 5)  
  
# Get more results  
configure_search(max_results = 20)  
  
## End(Not run)
```

configure_search_logging

Configure Python Search Logging Level

Description

Sets the logging level for the Python search module. This controls how much diagnostic output is produced during web searches.

Usage

```
configure_search_logging(level = "WARNING", conda_env = "asa_env")
```

Arguments

level	Log level: "DEBUG", "INFO", "WARNING" (default), "ERROR", or "CRITICAL"
conda_env	Name of the conda environment (default: "asa_env")

Details

Log levels from most to least verbose:

- DEBUG: Detailed diagnostic information for debugging
- INFO: General operational information
- WARNING: Indicates something unexpected but not an error (default)
- ERROR: Serious problems that prevented an operation
- CRITICAL: Very serious errors

Value

Invisibly returns the current logging level

Examples

```
## Not run:  
# Enable verbose debugging output  
configure_search_logging("DEBUG")  
  
# Run a search (will show detailed logs)  
result <- run_task("What is the population of Tokyo?", agent = agent)  
  
# Disable verbose output  
configure_search_logging("WARNING")  
  
## End(Not run)
```

decode_html	<i>Decode HTML Entities</i>
-------------	-----------------------------

Description

Converts HTML entities to their character equivalents.

Usage

```
decode_html(x)
```

Arguments

x	Character string with HTML entities
---	-------------------------------------

Value

Decoded string

extract_agent_results	<i>Extract Structured Data from Agent Traces</i>
-----------------------	--

Description

Parses raw agent output to extract search snippets, Wikipedia content, URLs, and JSON data. This is the main function for post-processing agent traces.

Usage

```
extract_agent_results(raw_output)
```

Arguments

raw_output	Raw output string from agent invocation (the trace field from an asa_response object)
------------	---

Value

A list with components:

- `search_snippets`: Character vector of search result content
- `search_urls`: Character vector of URLs from search results
- `wikipedia_snippets`: Character vector of Wikipedia content
- `json_data`: Extracted JSON data as a list (if present)

Examples

```
## Not run:
response <- run_agent("Who is the president of France?", agent)
extracted <- extract_agent_results(response$trace)
print(extracted$search_snippets)

## End(Not run)
```

extract_search_snippets

Extract Search Snippets by Source Number

Description

Extracts content from Search tool messages in the agent trace.

Usage

```
extract_search_snippets(text)
```

Arguments

text	Raw agent trace text
------	----------------------

Value

Character vector of search snippets, ordered by source number

Examples

```
## Not run:
snippets <- extract_search_snippets(response$trace)

## End(Not run)
```

extract_urls

Extract URLs by Source Number

Description

Extracts URLs from Search tool messages in the agent trace.

Usage

```
extract_urls(text)
```

Arguments

text	Raw agent trace text
------	----------------------

Value

Character vector of URLs, ordered by source number

Examples

```
## Not run:  
urls <- extract_urls(response$trace)  
  
## End(Not run)
```

extract_wikipedia_content
Extract Wikipedia Content

Description

Extracts content from Wikipedia tool messages in the agent trace.

Usage

```
extract_wikipedia_content(text)
```

Arguments

text Raw agent trace text

Value

Character vector of Wikipedia snippets

Examples

```
## Not run:  
wiki <- extract_wikipedia_content(response$trace)  
  
## End(Not run)
```

format_duration *Format Time Duration*

Description

Formats a numeric duration (in minutes) as a human-readable string.

Usage

```
format_duration(minutes)
```

Arguments

minutes	Numeric duration in minutes
---------	-----------------------------

Value

Formatted string

get_agent	<i>Get the Current Agent</i>
-----------	------------------------------

Description

Returns the currently initialized agent, or NULL if not initialized.

Usage

```
get_agent()
```

Value

An asa_agent object or NULL

Examples

```
## Not run:
agent <- get_agent()
if (is.null(agent)) {
  agent <- initialize_agent()
}

## End(Not run)
```

get_tor_ip	<i>Get External IP via Tor</i>
------------	--------------------------------

Description

Retrieves the external IP address as seen through Tor proxy.

Usage

```
get_tor_ip(proxy = "socks5h://127.0.0.1:9050")
```

Arguments

proxy	Tor proxy URL
-------	---------------

Value

IP address string or NA on failure

Examples

```
## Not run:
ip <- get_tor_ip()
message("Current Tor IP: ", ip)

## End(Not run)
```

initialize_agent	<i>Initialize the ASA Search Agent</i>
------------------	--

Description

Initializes the Python environment and creates the LangGraph agent with search tools (Wikipedia, DuckDuckGo). The agent can use multiple LLM backends and supports DeepAgent-style memory folding.

Usage

```
initialize_agent(
  backend = "openai",
  model = "gpt-4.1-mini",
  conda_env = "asa_env",
  proxy = "socks5h://127.0.0.1:9050",
  use_memory_folding = TRUE,
  memory_threshold = 4L,
  memory_keep_recent = 2L,
  rate_limit = 0.2,
  timeout = 120L,
  verbose = TRUE
)
```

Arguments

backend	LLM backend to use. One of: "openai", "groq", "xai", "exo", "openrouter"
model	Model identifier (e.g., "gpt-4.1-mini", "llama-3.3-70b-versatile")
conda_env	Name of the conda environment with Python dependencies
proxy	SOCKS5 proxy URL for Tor (default: "socks5h://127.0.0.1:9050"). Set to NULL to disable proxy.
use_memory_folding	Enable DeepAgent-style memory compression (default: TRUE)
memory_threshold	Number of messages before folding triggers (default: 4)
memory_keep_recent	Number of recent messages to preserve after folding (default: 2)
rate_limit	Requests per second for rate limiting (default: 0.2)
timeout	Request timeout in seconds (default: 120)
verbose	Print status messages (default: TRUE)

Details

The agent is created with two tools:

- Wikipedia: For looking up encyclopedic information
- DuckDuckGo Search: For web searches with a 4-tier fallback system (PRIMP -> Selenium -> DDGS library -> raw requests)

Memory folding (enabled by default) compresses older messages into a summary to manage context length in long conversations, following the DeepAgent paper.

Value

An object of class `asa_agent` containing the initialized agent and configuration.

API Keys

The following environment variables should be set based on your backend:

- OpenAI: OPENAI_API_KEY
- Groq: GROQ_API_KEY
- xAI: XAI_API_KEY
- OpenRouter: OPENROUTER_API_KEY

OpenRouter Models

When using the "openrouter" backend, model names must be in provider/model-name format.
Examples:

- "openai/gpt-4o"
- "anthropic/clause-3-sonnet"
- "google/gemma-2-9b-it:free"
- "meta-llama/llama-3-70b-instruct"

See <https://openrouter.ai/models> for available models.

See Also

[run_agent](#), [run_task](#)

Examples

```
## Not run:
# Initialize with OpenAI
agent <- initialize_agent(
  backend = "openai",
  model = "gpt-4.1-mini"
)

# Initialize with Groq and custom settings
agent <- initialize_agent(
  backend = "groq",
  model = "llama-3.3-70b-versatile",
  use_memory_folding = FALSE,
  proxy = NULL # No Tor proxy
```

```
)  
  
# Initialize with OpenRouter (access to 100+ models)  
agent <- initialize_agent(  
  backend = "openrouter",  
  model = "anthropic/clause-3-sonnet" # Note: provider/model format  
)  
  
## End(Not run)
```

is_tor_running	<i>Check if Tor is Running</i>
----------------	--------------------------------

Description

Checks if Tor is running and accessible on the default port.

Usage

```
is_tor_running(port = 9050L)
```

Arguments

port	Port number (default: 9050)
------	-----------------------------

Value

Logical indicating if Tor appears to be running

Examples

```
## Not run:  
if (!is_tor_running()) {  
  message("Start Tor with: brew services start tor")  
}  
  
## End(Not run)
```

json_escape	<i>Clean Text for JSON Output</i>
-------------	-----------------------------------

Description

Escapes special characters in text for safe inclusion in JSON strings.

Usage

```
json_escape(x)
```

Arguments

x	Character string to escape
---	----------------------------

Value

Escaped string

print.asa_agent	<i>Print Method for asa_agent Objects</i>
------------------------	---

Description

Print Method for asa_agent Objects

Usage

```
## S3 method for class 'asa_agent'
print(x, ...)
```

Arguments

x	An asa_agent object
...	Additional arguments (ignored)

Value

Invisibly returns the object

print.asa_response	<i>Print Method for asa_response Objects</i>
---------------------------	--

Description

Print Method for asa_response Objects

Usage

```
## S3 method for class 'asa_response'
print(x, ...)
```

Arguments

x	An asa_response object
...	Additional arguments (ignored)

Value

Invisibly returns the object

print.asa_result	<i>Print Method for asa_result Objects</i>
------------------	--

Description

Print Method for asa_result Objects

Usage

```
## S3 method for class 'asa_result'  
print(x, ...)
```

Arguments

x	An asa_result object
...	Additional arguments (ignored)

Value

Invisibly returns the object

print2	<i>Print Utility</i>
--------	----------------------

Description

Wrapper around cat for consistent output formatting.

Usage

```
print2(...)
```

Arguments

...	Arguments passed to cat
-----	-------------------------

process_outputs *Process Multiple Agent Outputs*

Description

Processes a data frame of raw agent outputs, extracting structured data.

Usage

```
process_outputs(df, parallel = FALSE, workers = 10L)
```

Arguments

df	Data frame with a 'raw_output' column containing agent traces
parallel	Use parallel processing
workers	Number of workers

Value

The input data frame with additional extracted columns: search_count, wiki_count, and any JSON fields found

reset_agent *Reset the Agent*

Description

Clears the initialized agent state, forcing reinitialization on next use. Also closes any open HTTP clients to prevent resource leaks.

Usage

```
reset_agent()
```

Value

Invisibly returns NULL

rotate_tor_circuit	<i>Rotate Tor Circuit</i>
--------------------	---------------------------

Description

Requests a new Tor circuit by restarting the Tor service.

Usage

```
rotate_tor_circuit(method = c("brew", "systemctl", "signal"), wait = 12L)
```

Arguments

method	Method to restart: "brew" (macOS), "systemctl" (Linux), or "signal"
wait	Seconds to wait for new circuit (default: 12)

Value

Invisibly returns NULL

Examples

```
## Not run:  
rotate_tor_circuit()  
  
## End(Not run)
```

run_agent	<i>Run the ASA Agent with a Custom Prompt</i>
-----------	---

Description

Invokes the search agent with an arbitrary prompt, returning the full agent trace and response. This is the low-level function for running the agent; for structured task execution, use [run_task](#).

Usage

```
run_agent(prompt, agent = NULL, recursion_limit = NULL, verbose = FALSE)
```

Arguments

prompt	The prompt to send to the agent
agent	An <code>asa_agent</code> object from initialize_agent , or NULL to use/create the default agent
recursion_limit	Maximum number of agent steps (default: 100 for memory folding, 20 otherwise)
verbose	Print status messages (default: FALSE)

Value

An object of class `asa_response` containing:

- `message`: The final response text
- `status_code`: 200 for success, 100 for error
- `raw_response`: The full Python response object
- `trace`: Full text trace of agent execution
- `elapsed_time`: Execution time in minutes
- `fold_count`: Number of memory folds (if memory folding enabled)

See Also

[initialize_agent](#), [run_task](#)

Examples

```
## Not run:
# Run with a custom prompt
agent <- initialize_agent()
result <- run_agent(
  prompt = "Who was the 44th president of the United States?",
  agent = agent
)
print(result$message)

## End(Not run)
```

run_agent_batch

Run Agent in Batch Mode

Description

Runs the agent on multiple prompts, optionally in parallel.

Usage

```
run_agent_batch(
  prompts,
  agent = NULL,
  parallel = FALSE,
  workers = 4L,
  progress = TRUE
)
```

Arguments

<code>prompts</code>	Character vector of prompts
<code>agent</code>	An <code>asa_agent</code> object
<code>parallel</code>	Use parallel processing (requires <code>future.apply</code> package)
<code>workers</code>	Number of parallel workers (default: 4)
<code>progress</code>	Show progress bar (default: TRUE)

Value

A list of asa_response objects

Examples

```
## Not run:
prompts <- c(
  "What is the population of Tokyo?",
  "What is the population of New York?"
)
results <- run_agent_batch(prompts, agent)

## End(Not run)
```

run_task

*Run a Structured Task with the Agent***Description**

Executes a research task using the AI search agent with a structured prompt and returns parsed results.

Usage

```
run_task(prompt, output_format = "text", agent = NULL, verbose = FALSE)
```

Arguments

<code>prompt</code>	The task prompt or question for the agent to research
<code>output_format</code>	Expected output format. One of: "text" (raw response), "json" (parse as JSON), or a character vector of field names to extract
<code>agent</code>	An asa_agent object from initialize_agent , or NULL to use the currently initialized agent
<code>verbose</code>	Print progress messages (default: FALSE)

Details

This function provides a high-level interface for running research tasks. For simple text responses, use `output_format = "text"`. For structured outputs, use `output_format = "json"` or specify field names to extract.

Value

An object of class asa_result with components:

- `prompt`: The original prompt
- `message`: The agent's response text
- `parsed`: Parsed output (if `output_format` specified)
- `raw_output`: Full agent trace
- `elapsed_time`: Execution time in minutes
- `status`: "success" or "error"

See Also

[initialize_agent](#), [run_agent](#), [run_task_batch](#)

Examples

```
## Not run:
# Initialize agent first
agent <- initialize_agent(backend = "openai", model = "gpt-4.1-mini")

# Simple text query
result <- run_task(
  prompt = "What is the capital of France?",
  output_format = "text",
  agent = agent
)
print(result$message)

# JSON structured output
result <- run_task(
  prompt = "Find information about Albert Einstein and return JSON with
            fields: birth_year, death_year, nationality, field_of_study",
  output_format = "json",
  agent = agent
)
print(result$parsed)

## End(Not run)
```

run_task_batch

Run Multiple Tasks in Batch

Description

Executes multiple research tasks, optionally in parallel.

Usage

```
run_task_batch(
  prompts,
  output_format = "text",
  agent = NULL,
  parallel = FALSE,
  workers = 4L,
  progress = TRUE
)
```

Arguments

- | | |
|----------------------------|--|
| <code>prompts</code> | Character vector of task prompts, or a data frame with a 'prompt' column |
| <code>output_format</code> | Expected output format (applies to all tasks) |
| <code>agent</code> | An asa_agent object |

parallel	Use parallel processing
workers	Number of parallel workers
progress	Show progress messages

Value

A list of asa_result objects, or if prompts was a data frame, the data frame with result columns added

Examples

```
## Not run:  
prompts <- c(  
  "What is the population of Tokyo?",  
  "What is the population of New York?",  
  "What is the population of London?"  
)  
results <- run_task_batch(prompts, agent = agent)  
  
## End(Not run)
```

safe_json_parse *Safe JSON Parse*

Description

Attempts to parse JSON, returning NULL on failure.

Usage

```
safe_json_parse(x)
```

Arguments

x	JSON string
---	-------------

Value

Parsed R object or NULL

summary.asa_agent *Summary Method for asa_agent Objects*

Description

Summary Method for asa_agent Objects

Usage

```
## S3 method for class 'asa_agent'  
summary(object, ...)
```

Arguments

object	An asa_agent object
...	Additional arguments (ignored)

Value

Invisibly returns a summary list

summary.asa_response *Summary Method for asa_response Objects*

Description

Summary Method for asa_response Objects

Usage

```
## S3 method for class 'asa_response'  
summary(object, show_trace = FALSE, ...)
```

Arguments

object	An asa_response object
show_trace	Include full trace in output
...	Additional arguments (ignored)

Value

Invisibly returns a summary list

summary.asa_result *Summary Method for asa_result Objects*

Description

Summary Method for asa_result Objects

Usage

```
## S3 method for class 'asa_result'  
summary(object, ...)
```

Arguments

object	An asa_result object
...	Additional arguments (ignored)

Value

Invisibly returns a summary list

truncate_string *Truncate String*

Description

Truncates a string to a maximum length, adding ellipsis if truncated.

Usage

```
truncate_string(x, max_length = 100, ellipsis = "...")
```

Arguments

x	Character string
max_length	Maximum length
ellipsis	String to append when truncated

Value

Truncated string

Index

* **internal**

- .build_trace, 3
- .close_http_clients, 4
- .create_agent, 4
- .create_http_clients, 5
- .create_llm, 5
- .create_tools, 5
- .extract_fields, 6
- .extract_json_from_trace, 6
- .extract_json_object, 6
- .extract_response_text, 7
- .get_extdata_path, 7
- .get_local_ip, 7
- .get_python_path, 8
- .handle_response_issues, 8
- .import_python_packages, 8
- .invoke_memory_folding_agent, 8
- .invoke_standard_agent, 9
- .is_initialized, 9
- .parse_json_response, 9
- asa-package, 3
- clean_whitespace, 14
- decode_html, 17
- format_duration, 19
- json_escape, 23
- print2, 25
- safe_json_parse, 31
- truncate_string, 33
- .build_trace, 3
- .close_http_clients, 4
- .create_agent, 4
- .create_http_clients, 5
- .create_llm, 5
- .create_tools, 5
- .extract_fields, 6
- .extract_json_from_trace, 6
- .extract_json_object, 6
- .extract_response_text, 7
- .get_extdata_path, 7
- .get_local_ip, 7
- .get_python_path, 8
- .handle_response_issues, 8
- .import_python_packages, 8
- .invoke_memory_folding_agent, 8
- .invoke_standard_agent, 9
- .is_initialized, 9
- .parse_json_response, 9
- asa.data.frame.asa_result, 10
- asa (asa-package), 3
- asa-package, 3
- asa_agent, 10
- asa_response, 11
- asa_result, 11
- build_backend, 3, 12
- build_prompt, 13
- check_backend, 14
- clean_whitespace, 14
- configure_search, 15
- configure_search_logging, 16
- decode_html, 17
- extract_agent_results, 17
- extract_search_snippets, 18
- extract_urls, 18
- extract_wikipedia_content, 19
- format_duration, 19
- get_agent, 20
- get_tor_ip, 20
- initialize_agent, 3, 21, 27–30
- is_tor_running, 23
- json_escape, 23
- print.asa_agent, 24
- print.asa_response, 24
- print.asa_result, 25
- print2, 25
- process_outputs, 26
- reset_agent, 26
- rotate_tor_circuit, 27
- run_agent, 3, 22, 27, 30

run_agent_batch, 28
run_task, 3, 22, 27, 28, 29
run_task_batch, 3, 30, 30

safe_json_parse, 31
summary.asa_agent, 32
summary.asa_response, 32
summary.asa_result, 33

truncate_string, 33