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# **Aali Flowkit Python**



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The Aali Flowkit Python is a Python service that exposes features from Aali Flowkit to Python users. This documentation provides information on how to install and use the Aali Flowkit Python.

The Aali Flowkit Python offers these main features:

Getting started Learn how to install the Aali Flowkit Python in user mode and quickly begin using it.

Getting started User guide Understand key concepts for implementing the Aali Flowkit Python in your

workflow.

User guide API reference Understand how to use Python to interact programmatically with the Aali Flowkit Python.

*The src.aali.flowkit library* Examples Explore examples that show how to use the Aali Flowkit Python to perform many different types of operations.

Examples Contribute Learn how to contribute to the Aali Flowkit Python codebase or documentation.

Contribute

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**ONE** 

# **GETTING STARTED**

This section describes how to install the Aali Flowkit Python in user mode and quickly begin using it. If you are interested in contributing to the Aali Flowkit Python, see *Contribute* for information on installing in developer mode.

# 1.1 Installation

To use pip to install the Aali Flowkit Python, run this command:

```
pip install aali-flowkit-python
```

Alternatively, to install the latest version from this library's GitHub repository, run these commands:

```
git clone https://github.com/ansys/aali-flowkit-python
cd aali-flowkit-python
pip install .
```

# 1.1.1 Quick start

The following examples show how to use the Aali Flowkit Python.

```
aali-flowkit-python --host 0.0.0.0 --port 50052 --workers 1
```

# **TWO**

# **USER GUIDE**

This section explains key concepts for implementing the Aali Flowkit Python in your workflow. You can use the Aali Flowkit Python in your examples as well as integrate this library into your own code.

# **THREE**

# **API REFERENCE**

This section describes Aali Flowkit Python endpoints, their capabilities, and how to interact with them programmatically.

# 3.1 The src.aali.flowkit library

# **3.1.1 Summary**

# **Subpackages**

config	Configuration package for the application.
endpoints	Endpoints package responsible for defining the endpoints.
models	Models package used to define the data models.
utils	Utils module.

# **Submodules**

main	Main module for the FlowKit service.
fastapi_utils	Utils module for FastAPI related operations.
flowkit_service	Module for the Aali Flowkit service.

# **Attributes**

\_\_version\_\_

# The config package

# **Summary**

# **Description**

Configuration package for the application.

# The endpoints package

# **Summary**

#### **Submodules**

mechscriptbot	Module for triggering the MechanicalScriptingBot application.
splitter	Module for splitting text into chunks.

# The mechscriptbot.py module

# **Summary**

#### **Functions**

triggermechscriptbot Endpoint for triggering the MechanicalScriptingBot application.

#### **Attributes**

router

# **Description**

Module for triggering the MechanicalScriptingBot application.

#### **Module detail**

async mechscriptbot.triggermechscriptbot(request:

aali.flowkit.models.mechscriptbot.MechScriptBotRequest,  $api\_key$ : str = Header(...))  $\rightarrow$  aali.flowkit.models.mechscriptbot.MechScriptBotResponse

Endpoint for triggering the Mechanical Scripting Bot application.

#### **Parameters**

# request

[MechScriptBotRequest] An object containing the input query and other relevant parameters for the MechanicalScriptingBot application.

# api\_key

[str] The API key for authentication.

#### Returns

# MechScriptBotResponse

An object containing the output and other relevant metadata for the MechanicalScriptingBot application.

mechscriptbot.router

# The splitter.py module

# **Summary**

# **Functions**

split_ppt	Endpoint for splitting text in a PowerPoint document into chunks.
split_py	Endpoint for splitting Python code into chunks.
split_pdf	Endpoint for splitting text in a PDF document into chunks.
process_ppt	Process a PowerPoint document to split text into chunks.
<pre>process_python_code</pre>	Process Python code to split text into chunks.
process_pdf	Process a PDF document to split text into chunks.
validate_request	Validate the splitter request and API key.

#### **Attributes**

router

#### **Constants**

TOKEN\_TO\_CHARACTER\_MULTIPLIER

# **Description**

Module for splitting text into chunks.

#### Module detail

```
async splitter.split_ppt(request: aali.flowkit.models.splitter.SplitterRequest, api\_key: str = Header(...)) \rightarrow
                                                                      aali.flowkit.models.splitter.SplitterResponse
             Endpoint for splitting text in a PowerPoint document into chunks.
                         Parameters
                                   request
                                            [SplitterRequest] An object containing 'document_content' in Base64, 'chunk_size',
                                            and 'chunk_overlap'
                                   api_key
                                            [str] The API key for authentication.
async splitter.splitt_py(request: aali.flowkit.models.splitter.SplitterRequest, api\_key: str = Header(...)) \rightarrow
                                                                    aali.flowkit.models.splitter.SplitterResponse
             Endpoint for splitting Python code into chunks.
                         Parameters
                                   request
                                            [SplitterRequest] An object containing 'document_content' in Base64, 'chunk_size',
                                            and 'chunk_overlap'
                                   api key
                                            [str] The API key for authentication.
                         Returns
                                   SplitterResponse
                                            An object containing a list of text chunks.
async splitter.split_pdf(request: aali.flowkit.models.splitter.SplitterRequest, api\_key: str = Header(...)) \rightarrow
                                                                      aali.flowkit.models.splitter.SplitterResponse
             Endpoint for splitting text in a PDF document into chunks.
                         Parameters
                                   request
                                             [SplitterRequest] An object containing 'document_content' in Base64, 'chunk_size',
                                            and 'chunk_overlap'.
                                   api_key
                                            [str] The API key for authentication.
                         Returns
                                   SplitterResponse
                                            An object containing a list of text chunks.
\verb|splitter.process_ppt(|request: aali.flowkit.models.splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Sp
                                                           a a li. flow kit. models. splitter. Splitter Response \\
             Process a PowerPoint document to split text into chunks.
                         Parameters
                                             [SplitterRequest] An object containing 'document_content' in Base64, 'chunk_size',
                                            and 'chunk overlap'
                         Returns
```

#### **SplitterResponse**

An object containing a list of text chunks.

```
splitter.process\_python\_code(request: aali.flowkit.models.splitter.Splitter.SplitterRequest) \rightarrow aali.flowkit.models.splitterResponse
```

Process Python code to split text into chunks.

#### **Parameters**

#### request

[SplitterRequest] An object containing 'document\_content' in Base64, 'chunk\_size', and 'chunk\_overlap'

#### Returns

#### **SplitterResponse**

An object containing a list of text chunks.

```
splitter.process\_pdf(request: aali.flowkit.models.splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Splitter.Split
```

Process a PDF document to split text into chunks.

#### **Parameters**

#### request

[SplitterRequest] An object containing 'document\_content' in Base64, 'chunk\_size', and 'chunk\_overlap'

#### Returns

#### **SplitterResponse**

An object containing a list of text chunks.

splitter.validate\_request(request: aali.flowkit.models.splitter.SplitterRequest, api\_key: str)

Validate the splitter request and API key.

#### Parameters

#### request

[SplitterRequest] An object containing 'document\_content' in Base64, 'chunk\_size', and 'chunk\_overlap'

#### api key

[str] The API key for authentication.

# Raises

# **HTTPException**

If the API key is invalid or if any of the request parameters are invalid.

```
splitter.TOKEN_TO_CHARACTER_MULTIPLIER = 4
```

```
splitter.router
```

Endpoints package responsible for defining the endpoints.

# The models package

# **Summary**

#### **Submodules**

functions	Module for defining the models used in the endpoints.
mechscriptbot	Model for the MechanicalScriptingBot endpoint.
splitter	Model for the splitter endpoint.

# The functions.py module

# **Summary**

#### **Classes**

ParameterInfo	Parameter information model.
EndpointInfo	Endpoint information model.

#### **Enums**

FunctionCategory Enum for function categories.

#### ParameterInfo

class src.aali.flowkit.models.functions.ParameterInfo(/, \*\*data: Any)

Bases: pydantic.BaseModel

Parameter information model.

# **Parameters**

#### BaseModel

[pydantic.BaseModel] The base model for the parameter information

# **Overview**

#### **Attributes**

name type

# Import detail

```
from src.aali.flowkit.models.functions import ParameterInfo
```

#### Attribute detail

ParameterInfo.name: str ParameterInfo.type: str

# EndpointInfo

 $\textbf{class} \ \texttt{src.aali.flowkit.models.functions.} \textbf{EndpointInfo} (\textit{/}, **data: Any)$ 

Bases: pydantic.BaseModel

Endpoint information model.

#### **Parameters**

# BaseModel

[pydantic.BaseModel] The base model for the endpoint information

#### Overview

# **Attributes**

name
path
category
display\_name
description
inputs
outputs
definitions

# Import detail

```
from src.aali.flowkit.models.functions import EndpointInfo
```

# **Attribute detail**

EndpointInfo.name: str
EndpointInfo.path: str

EndpointInfo.category: str

EndpointInfo.display\_name: str

EndpointInfo.description: str

EndpointInfo.inputs: list[ParameterInfo]

EndpointInfo.outputs: list[ParameterInfo]

EndpointInfo.definitions: dict[str, Any]

# ${\bf Function Category}$

class src.aali.flowkit.models.functions.FunctionCategory(\*args, \*\*kwds)

Bases: enum. Enum

Enum for function categories.

#### Overview

#### **Attributes**

DATA\_EXTRACTION
GENERIC
KNOWLEDGE\_DB
LLM\_HANDLER
ANSYS\_GPT

# Import detail

from src.aali.flowkit.models.functions import FunctionCategory

# **Attribute detail**

```
FunctionCategory.DATA_EXTRACTION = 'data_extraction'
FunctionCategory.GENERIC = 'generic'
FunctionCategory.KNOWLEDGE_DB = 'knowledge_db'
FunctionCategory.LLM_HANDLER = 'llm_handler'
FunctionCategory.ANSYS_GPT = 'ansys_gpt'
```

# **Description**

Module for defining the models used in the endpoints.

#### The mechscriptbot.py module

# **Summary**

#### **Classes**

MechScriptBotRequest	Request model for the MechanicalScriptingBot endpoint.
${\it MechScriptBotResponse}$	Response model for the MechanicalScriptingBot endpoint.

#### MechScriptBotRequest

```
class src.aali.flowkit.models.mechscriptbot.MechScriptBotRequest(/, **data: Any)
    Bases: pydantic.BaseModel
```

Request model for the MechanicalScriptingBot endpoint.

# **Parameters**

# BaseModel

[pydantic.BaseModel] The base model for the request.

#### Overview

#### **Attributes**

```
question
mech_script_bot_url
full_human_memory
full_ai_memory
full_variables
full_mechanical_objects
```

# Import detail

```
from src.aali.flowkit.models.mechscriptbot import MechScriptBotRequest
```

#### Attribute detail

```
MechScriptBotRequest.question: str

MechScriptBotRequest.mech_script_bot_url: str

MechScriptBotRequest.full_human_memory: list[str]

MechScriptBotRequest.full_ai_memory: list[str]

MechScriptBotRequest.full_variables: list[str]

MechScriptBotRequest.full_mechanical_objects: list[str]
```

# MechScriptBotResponse

```
class src.aali.flowkit.models.mechscriptbot.MechScriptBotResponse(/, **data: Any)
    Bases: pydantic.BaseModel
```

Response model for the MechanicalScriptingBot endpoint.

#### **Parameters**

#### BaseModel

[pydantic.BaseModel] The base model for the response.

#### **Overview**

#### **Attributes**

output
updated\_human\_memory
updated\_ai\_memory
updated\_variables
updated\_mechanical\_objects

# Import detail

```
from src.aali.flowkit.models.mechscriptbot import MechScriptBotResponse
```

# **Attribute detail**

MechScriptBotResponse.output: str

MechScriptBotResponse.updated\_human\_memory: list[str]

MechScriptBotResponse.updated\_ai\_memory: list[str]

MechScriptBotResponse.updated\_variables: list[str]

MechScriptBotResponse.updated\_mechanical\_objects: list[str]

# **Description**

Model for the MechanicalScriptingBot endpoint.

The splitter.py module

# **Summary**

#### **Classes**

SplitterRequest	Request model for the splitter endpoint.
SplitterResponse	Response model for the splitter endpoint.

# **SplitterRequest**

class src.aali.flowkit.models.splitter.SplitterRequest(/, \*\*data: Any)

Bases: pydantic.BaseModel

Request model for the splitter endpoint.

# **Parameters**

# BaseModel

[pydantic.BaseModel] The base model for the request.

#### Overview

#### **Attributes**

document\_content
chunk\_size
chunk\_overlap

# Import detail

```
from src.aali.flowkit.models.splitter import SplitterRequest
```

#### **Attribute detail**

[pydantic.BaseModel] The base model for the response.

# **Overview**

# Attributes

chunks

# Import detail

```
from src.aali.flowkit.models.splitter import SplitterResponse
```

#### **Attribute detail**

SplitterResponse.chunks: list[str]

Model for the splitter endpoint.

# **Description**

Models package used to define the data models.

# The utils package

# **Summary**

# **Submodules**

decorators Decorators module for function definitions.
--

# The decorators.py module

# **Summary**

# **Functions**

category	Decorator to add a category to the function.
display_name	Decorator to add a display name to the function.

# **Description**

Decorators module for function definitions.

#### Module detail

```
decorators.category(value: str)
```

Decorator to add a category to the function.

```
decorators.display_name(value: str)
```

Decorator to add a display name to the function.

Utils module.

# The \_\_main\_\_.py module

# **Summary**

#### **Functions**

parse_cli_args	Parse the command line arguments.
<pre>substitute_empty_values</pre>	Substitute the empty values with configuration values.
main	Run entrypoint for the FlowKit service.

# **Description**

Main module for the FlowKit service.

#### Module detail

```
__main__.parse_cli_args()
    Parse the command line arguments.
__main__.substitute_empty_values(args)
    Substitute the empty values with configuration values.
__main__.main()
    Run entrypoint for the FlowKit service.
```

# The fastapi\_utils.py module

# **Summary**

# **Functions**

extract_field_type	Extract the field type from a given schema field information.
<pre>extract_fields_from_schema</pre>	Extract fields and their types from a schema.
<pre>get_parameters_info</pre>	Get parameter information from function parameters.
<pre>get_return_type_info</pre>	Get return type information from the function's return type.
<pre>extract_definitions_from_schema</pre>	Extract definitions from a schema.
<pre>get_definitions_from_params</pre>	Get definitions from function parameters.
<pre>get_definitions_from_return_type</pre>	Get definitions from the function's return type.
<pre>extract_endpoint_info</pre>	Extract endpoint information from the given routes.

Utils module for FastAPI related operations.

```
Module detail
```

```
fastapi_utils.extract_field_type(field info: dict)
     Extract the field type from a given schema field information.
           Parameters
               field info
                   [dict] The field information from the schema.
           Returns
               str
                   The extracted field type.
fastapi_utils.extract_fields_from_schema(schema: dict)
     Extract fields and their types from a schema.
           Parameters
               schema
                   [dict] The schema dictionary.
           Returns
               list
                   A list of ParameterInfo objects representing the fields.
fastapi_utils.get_parameters_info(params: dict)
     Get parameter information from function parameters.
           Parameters
               params
                   [dict] A dictionary of function parameters.
           Returns
               list
                   A list of ParameterInfo objects representing the parameters.
fastapi_utils.get_return_type_info(return_type: type[pydantic.BaseModel])
     Get return type information from the function's return type.
           Parameters
               return type
                   [type[BaseModel]] The return type of the function.
           Returns
               list
                   A list of ParameterInfo objects representing the return type fields.
fastapi\_utils.extract\_definitions\_from\_schema(schema: dict) \rightarrow dict[str, Any]
     Extract definitions from a schema.
```

**Parameters** 

```
schema
                    [dict] The schema dictionary.
           Returns
               dict
                    A dictionary of definitions.
fastapi_utils.get_definitions_from_params(params: dict) \rightarrow dict[str, Any]
      Get definitions from function parameters.
           Parameters
               params
                    [dict] A dictionary of function parameters.
           Returns
               dict
                    A dictionary of definitions extracted from the parameters.
fastapi\_utils.get\_definitions\_from\_return\_type(return\_type: type[pydantic.BaseModel]) \rightarrow dict[str, type]
                                                            Any]
      Get definitions from the function's return type.
           Parameters
               return type
                    [type[BaseModel]] The return type of the function.
           Returns
               dict
                    A dictionary of definitions extracted from the return type.
fastapi_utils.extract_endpoint_info(function_map: dict[str, Any], routes: list[fastapi.routing.APIRoute])
                                              → list[aali.flowkit.models.functions.EndpointInfo]
      Extract endpoint information from the given routes.
           Parameters
               function_map
                    [dict[str, Any]] A dictionary mapping function names to their implementations.
                    [list[APIRoute]] A list of APIRoute objects representing the API routes.
           Returns
               list
                    A list of EndpointInfo objects representing the endpoints.
```

# The flowkit\_service.py module

#### **Summary**

#### **Functions**

list\_functions List all available functions and their endpoints.

#### **Attributes**

flowkit\_service
function\_map

# **Description**

Module for the Aali Flowkit service.

#### Module detail

```
async flowkit_service.list_functions(api\_key: str = Header(...)) \rightarrow list[aali.flowkit.models.functions.EndpointInfo]
```

List all available functions and their endpoints.

#### **Parameters**

```
api_key
    [str] The API key for authentication.
```

#### Returns

# list[EndpointInfo]

A list of EndpointInfo objects representing the endpoints.

flowkit\_service.flowkit\_service

flowkit\_service.function\_map

# 3.1.2 Description

App package responsible for creating the FastAPI app.

# 3.1.3 Module detail

flowkit.\_\_version\_\_

# CHAPTER FOUR

# **EXAMPLES**

This section show how to use the Aali Flowkit Python to perform many different types of operations.

**FIVE** 

# **CONTRIBUTE**

Overall guidance on contributing to a PyAnsys library appears in the Contributing topic in the *PyAnsys developer's guide*. Ensure that you are thoroughly familiar with this guide before attempting to contribute to the Aali Flowkit Python.

The following contribution information is specific to the Aali Flowkit Python.

# 5.1 Clone the repository

To clone and install the latest Aali Flowkit Python release in development mode, run these commands:

```
git clone https://github.com/ansys/aali-flowkit-python/
cd aali-flowkit-python
python -m pip install --upgrade pip
pip install -e .
```

# 5.2 Adhere to code style

Aali Flowkit Python follows the PEP8 standard as outlined in PEP 8 in the PyAnsys Developer's Guide and implements style checking using pre-commit.

To ensure your code meets minimum code styling standards, run these commands:

```
pip install pre-commit
pre-commit run --all-files
```

You can also install this as a pre-commit hook by running this command:

```
pre-commit install
```

# 5.3 Run the tests

Prior to running the tests, you must run this command to install the test dependencies:

```
pip install -e .[tests]
```

To run the tests, navigate to the root directory of the repository and run this command:

pytest

# 5.4 Build the documentation

Prior to building the documentation, you must run this command to install the documentation dependencies:

```
pip install -e .[doc]
```

To build the documentation, run the following commands:

```
cd doc

# On linux
make html

# On windows
./make.bat html
```

The documentation is built in the *docs/\_build/html* directory.

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