DialogueManager

+ state\_manager: StateManager
- \_user\_intents\_classifier: UserIntentsClassifier
- \_rec\_actions\_classifier: RecActionsClassifier
- \_hard\_coded\_responses: list[dict]
- \_llm\_wrapper: LLMWrapper

+ get\_response(user\_input: str): str
- \_generate\_response(rec\_actions: list[RecAction]): str

ProvidePreference

+ attribute1:type = defaultValue
+ attribute2:type
- attribute3:type

+ operation1(params):returnType
- operation2(params)
- operation3()

AcceptedItemsExtractor

\_llm\_wrapper: LLMWrapper\_domain: str\_fewshots: list[dict[str, Any]]+ template: jinja2.environment.Template

+ extract(conv\_history: list[Message], all\_mentioned\_items: list[RecommendedItem], recently\_mentioned\_items: list[RecommendedItem]): list[RecommendedItem] - \_generate\_prompt(conv\_history: list[Message], all\_mentioned\_items: list[RecommendedItem]): str

RejectedItemsExtractor

\_domain: str\_fewshots: list[dict[str, Any]]+ template: jinja2.environment.Template

\_llm\_wrapper: LLMWrapper

outurat/acour bistomu list[Massacra] all magnetics

+ extract(conv\_history: list[Message], all\_mentioned\_items: list[RecommendedItem],
 recently\_mentioned\_items: list[RecommendedItem]): list[RecommendedItem]
 - \_generate\_prompt(conv\_history: list[Message], all\_mentioned\_items: list[RecommendedItem], recently\_mentioned\_items: list[RecommendedItem]): str

CurrentItemsExtractor

\_llm\_wrapper: LLMWrapper\_domain: str\_fewshots: list[dict[str, Any]]+ template: jinja2.environment.Template

+ extract(recommended\_items: list[list[RecommendedItem]], conv\_history: list[Message]): list[RecommendedItem] | None
- \_generate\_restaurants\_update\_prompt(conv\_history: list[Message],

recommended\_restaurants: list[list[RecommendedItem]]): str

ConstraintsUpdater

+ update\_constraints(state\_manager: StateManager): None

OneStepConstraintsUpdater

- \_llm\_wrapper: LLMWrapper
- \_constraints\_categories: list[dict]
- \_constraint\_keys: list[str]
- \_cumulative\_constraints\_keys: list[str]
- \_key\_to\_default\_value: dict[str, str]
- \_user\_defined\_constraint\_mergers: list[ConstraintMerger]

- \_user\_defined\_constraint\_mergers. list[Ci - \_domain: str + template: jinja2.environment.Template - \_few\_shots: list

+ update\_constraints(state\_manager: StateManager): None
- \_generate\_prompt(state\_manager: StateManager): str
- \_format\_llm\_response(llm\_response: str): dict[str, Any]
- \_get\_updated\_keys\_in\_constraints(old\_constraints: dict[str, Any],
new\_constraints: dict[str, Any]): dict[str, bool]
- \_merge\_constraints(old\_constraints: dict[str, Any], new\_constraints: dict[str, Any], updated\_keys: dict[str, bool]): None

ConvRecSystem + user\_interface: UserInterface + dialogue\_manager: DialogueManager + is\_gpt\_retry\_notified: bool + is\_warning\_notified: bool + init\_msg: str + run(): None + notify\_gpt\_retry(): None + get\_response(): str + notify\_warning(): None **\*\*\*** DomainSpecificConfigLoader MetadataWrapper FilterApplier InformationRetrieval <<LLMWrapper>> + system\_config: dict + items\_metadata: pd.DataFrame \_metadata\_wrapper: MetadataWrapper \_search\_engine: SearchEngine + total\_tokens\_used: int = 0 + filters: list[Filter] \_metadata\_wrapper: MetadataWrapper + total\_cost: int = 0 \_item\_loader: ItemLoader + load\_domain(): str + get\_item\_dict\_from\_id(item\_id: str): dict[str, Any] + load\_constraints\_categories(): list[dict] + get\_item\_dict\_from\_index(index: int): dict[str, Any] + apply\_filter(state\_manager: + make\_request(message: str): str + load\_accepted\_items\_fewshots(): list[dict] StateManager): list[int] + get\_num\_item(): int + get\_best\_matching\_items(query: str, topk\_items: int, topk\_reviews: int, + get\_total\_tokens\_used(): int + filter\_by\_current\_item(current\_item: + load\_accepted\_items\_fewshots(): list[dict] item\_indices\_to\_keep: list[int], unacceptable\_similarity\_range: float = 0.5, + get\_metadata(): pd..DataFrame + get\_total\_cost(): int RecommendedItem): list[int] + load\_rejected\_items\_fewshots(): list[dict] max\_number\_similar\_items: int = 5): list[list[RecommendedItem]] + load\_current\_items\_fewshots(): list[dict] + get\_best\_matching\_reviews\_of\_item(query: str, + load\_constraints\_updater\_fewshots(): list[dict] num\_of\_reviews\_to\_return: int, item\_indices\_to\_keep: list[int], unacceptable\_similarity\_range: float = 0.5, max\_number\_similar\_items: int = + load\_answer\_extract\_category\_fewshots(): list[dict] + load\_answer\_ir\_fewshots(): list[dict] 5): list[list[list[str]]] GPTWrapper AlpacaLoraWrapper \_create\_recommended\_items(query: str, item\_ids: list[list[str]], + load\_answer\_separate\_questions\_fewshots(): list[dict] items\_most\_relevant\_reviews: list[list[list[str]]]): list[list[RecommendedItem]] + load\_answer\_verify\_metadata\_resp\_fewshots(): list[dict] \_model\_name: str = "gpt-3.5-turbo" \_temperature: float = 0.1 \_load\_domain\_specific\_config(): dict \_temperature: Optional[float] = None - \_get\_path\_to\_domain(): str  $_{\rm max}$  attempt: int = 5 + make\_request(message: str): str + load\_inquire\_classification\_fewshots(): list[dict] \_min\_sleep: int = 3 + load\_accept\_classification\_fewshots(): list[dict]  $_{\rm max\_sleep:}$  int = 60 <<SearchEngine>> + load\_reject\_classification\_fewshots(): list[dict] \_timeout: float = 15 + load\_filters(): list[Filter] + \_embedder: BERT\_model + load\_item\_metadata(): pd.DataFrame \_review\_item\_ids: np.ndarray + make\_request(message: str): str + load\_data\_for\_pd\_search\_engine(): tuple[np.ndarray, - \_reviews: np.ndarray np.ndarray, torch.Tensor] + load\_data\_for\_vector\_database\_search\_engine(): + search\_for\_topk(query: str, topk\_items: int, topk\_reviews: int, item\_indices\_to\_keep: list[int], tuple[np.ndarray, np.ndarray, VectorDataBase] unacceptable\_similarity\_range: float, max\_number\_similar\_items: int): tuple[list[list[str]], list[list[str]]]] - \_create\_database(reviews\_df: pd.DataFrame, path\_to\_database: \_similarity\_score\_each\_review(query: torch.Tensor): torch.Tensor str): faiss.Index \_similarity\_score\_each\_item(similarity\_score: torch.Tensor, k: int): tuple[torch.Tensor, torch.Tensor] - \_create\_embedding\_matrix(reviews\_df: pd.DataFrame, \_most\_similar\_item(similarity\_score\_item: torch.Tensor, top\_k\_items: int, path\_to\_embedding\_matrix: str): torch.Tensor unacceptable\_similarity\_range: float, max\_number\_similar\_items: int): torch.Tensor \_create\_embedding\_matrix(reviews\_df: pd.DataFrame, - \_filter\_item\_similarity\_score(similarity\_score\_item: torch.Tensor, id\_index: list[int]): torch.Tensor path\_to\_embedding\_matrix: str): torch.Tensor \_get\_topk\_item\_id( most\_similar\_item\_index: torch.Tensor, index\_most\_similar\_review: torch.Tensor): + load\_hard\_coded\_responses(): list[dict] + load\_explanation\_metadata\_blacklist(): list[str] - \_load\_dict\_in\_cell(data\_string: str): dict - \_get\_review(most\_similar\_item\_index: torch.Tensor, index\_most\_similar\_review: torch.Tensor): list[list[list[str]]] PDSearchEngine Class \_reviews\_embedding\_matrix: database: VectorDataBase torch.Tensor similarity score each review(query: torch.Tensor): torch.Tensor \_similarity\_score\_each\_review(query: torch.Tensor): torch.Tensor BERT model + \_bert\_name: str + tokenizer: transformers.models.distilbert.tokenization\_distilbert fast.DistilBertTokenizerFast - \_bert\_model: keras.src.engine.functional.Functional - \_first\_input: str \_second\_input: str

device: torch.device

+ embed(texts: list[str], strategy=None, bs=48, verbose=0): np.ndarray

+ get\_tensor\_embedding(query: str): torch.Tensor

- create\_model(bert\_name: str, from\_py: bool = True): tuple[keras.src.engine.functional.Functional, str, str]