

Explainable Semantic Similarity API (v1.0)

3. Functional Requirements (API Specification)						
	Requirement	Status	Implementation			
3.1 API Endpoint Definition (Minimum Viable Product)	POST /api/v1/similarity	Implemented	FastAPI endpoint			
3.2 Request Body	JSON Request Body	Implemented	Pydantic schema			
3.3 Response Body	Explainable Response	Implemented	Concept overlap output			
3.4 Response Fields Details	Field Details	Implemented	Same as Ask			
4. Technical Architecture and Workflow						
	Stage	Requirement	Status	Evidence		
4.1 Stage 1: Overall Similarity Score	Stage 1	Sentence Embedding Similarity	Implemented	MiniLM embeddings		
4.2 Stage 2: Explainable Concept Overlap	Stage 2	Concept Extraction + Matching	Implemented	spaCy + SBERT		
5.2 Acceptance Criteria (Mandatory for Launch)						
	ID	Category	Description	Required	Achieved Status	Evidence
	AC-F.1	Functional Correctness	API returns JSON for valid inputs	YES	YES	Swagger + Live API response
	AC-F.2	Input Handling	400 error for >200k chars	YES	YES	Validation logic in API
	AC-Q.1	Similarity Accuracy	Pearson ≥ 0.85 on GS-Sim-100	YES	YES (0.95)	compute_metrics.py
	AC-Q.2	Concept Recall	Recall $\geq 80\%$ on 50 test pairs	YES	YES (98%)	GS-Sim-50 test
	AC-Q.3	Concept Explainability	Missing detected $\geq 90\%$	YES	YES (92%)	Concept removal tests
	AC-P.1	Performance Baseline	99th percentile < 5s	YES	YES	Docker local test
6. Test Plan						
	Test Type	Coverage	Status			
6.1 Unit and Integration Testing	Unit Tests	API contract & edge cases	Covered			
6.2 Performance and Stress Testing	Integration Tests	End-to-end API	Covered			
6.3 Model Quality Testing (Mandatory)	Model Quality	GS-Sim-100 metrics	Covered			