AMOS P5 - Planning Document Project Data

	Knowledge Graph Extractor (Hella)
Online team meeting	https://fau.zoom-x.de/j/67111681334?pwd=LzdBM3IXeXhPTEtWL3IGUnFqbTAzZz09
Production system (if any)	
Test system (if any)	
GitHub repository	https://github.com/amosproj/amos2024ss05-knowledge-graph-extractor
GitHub feature board	https://github.com/orgs/amosproj/projects/56/views/2
GitHub impediments backlog	https://github.com/orgs/amosproj/projects/69
Team T-shirt (white)	
Team T-shirt (black)	https://www.shirtinator.de/s/pYjJO4qcR3u9lSKbgQdyiw
Additional materials	
Team maling list	oss-amos-proj5@lists.fau.de
Project notes	https://docs.google.com/document/d/10lcUP4HQkkPC0CHgqSkg_3PN46-r5dKddH-FLOZh-uo/edit
Questions for Industry Partner	https://docs.google.com/document/d/1DsWOP9P-WQFEtSQg0vFGQ1AePdJhCblhrcKZ2X8oE/edit
Single Demo Day Slides	https://docs.google.com/presentation/d/117Dtbkm4HWCBunBCTG7MC_yQGgf65zF7/edit#slide=id.g2ea86f049f2_0_0
Demo video slides	https://docs.google.com/presentation/d/1_LUVofRksDbKnRNJpvj6N50Crg2OXrlO/edit#slide=id.p1
Demo day slides	https://docs.google.com/presentation/d/1SZt8DKno8YjCOdPmgsX_dqkMbXW8nkFi/edit#slide=id.p1

AMOS P5 - Planning Document Project Team

Last Name	First Name	GitHub User Name	Email Address
Kuo	Irene	kuoirene	kuo.irene.y@gmail.com
Greiner	Rebecca	RebeccaGreiner	rebecca.greiner@fau.de
Rauscher	Nikolas	nikolas-rauscher	nikolas.rauscher@gmail.com
Ozseker	Irem	iremozs	iremozseker@gmail.com
Müller	Hanna	hanna-212	hanna.mueller@fau.de
Fabian Borges	Filipe Alexandre	borges-filipe	filipe.af.borges@gmail.com
Kotini	Kristi	kristikotini	kristi.kotini@fau.de
Bhesaniya	Yash	yashbhesaniya	yashbhesaniya1999@gmail.com
Ramesh	Sandeepkumar	Sandeep-kumar-Ramesh	sandeepkumar.ramesh@fau.de
Hoffmann	Florian	get4flo	f.hoffmann@campus.tu-berlin.de

AMOS P5 - Planning Document Role Assignments

#	Meeting Day Product O	wners	Software Developer	Release Manager	Scrum Master	Comment
1	2024-04-17 Irene Kuo,	Rebecca Greiner	Everyone else	n/a	Hanna Müller	
2	2024-04-24 Irene Kuo,	Rebecca Greiner	Everyone else	n/a	Hanna Müller	
3	2024-05-01 Irene Kuo,	Rebecca Greiner	Everyone else	n/a	Hanna Müller	
4	2024-05-08 Irene Kuo,	Rebecca Greiner	Everyone else	n/a	Hanna Müller	
5	2024-05-15 Irene Kuo,	Rebecca Greiner	Everyone else	Kristi Kotini	Hanna Müller	
6	2024-05-22 Irene Kuo,	Rebecca Greiner	Everyone else	Nikolas Rauscher	Hanna Müller	
7	2024-05-29 Irene Kuo,	Rebecca Greiner	Everyone else	Sandeepkumar Ramesh	Hanna Müller	Mid-term due
8	2024-06-05 Irene Kuo,	Rebecca Greiner	Everyone else	Yash Bhesaniya	Hanna Müller	
9	2024-06-12 Irene Kuo,	Rebecca Greiner	Everyone else	Florian Hoffmann	Hanna Müller	
10	2024-06-19 Irene Kuo,	Rebecca Greiner	Everyone else	Filipe Borges	Hanna Müller	
11	2024-06-26 Irene Kuo,	Rebecca Greiner	Everyone else	Kristi Kotini	Hanna Müller	
12	2024-07-03 Irene Kuo,	Rebecca Greiner	Everyone else	Nikolas Rauscher	Hanna Müller	
13	2024-07-10 Irene Kuo,	Rebecca Greiner	Everyone else	Irem Ozseker	Hanna Müller	
14	2024-07-17 Irene Kuo,	Rebecca Greiner	Everyone else	Florian Hoffmann	Hanna Müller	Demo day!
15	2024-07-24 Irene Kuo,	Rebecca Greiner	Everyone else		Hanna Müller	Retrospective

AMOS P5 - Planning Document Team Contract

	1. Finish tasks for each sprint on time.	
Goals		
	Be on time! (send a msg in WhatsApp if you'll be late)	
Masting name	Show up (unless deathly sick) Try to participate actively	
Meeting norms	3. Try to participate actively	
	Good comments/documentation of work so everyone can follow easily.	
	Don't do everything the day before it's due.	
Working norms	3. Reach out if you have questions, help each other out!	
	Make it clear on the feature board what you're working on.	
Coordination norms	If you're overwhelmed, communicate so we can reassign tasks.	
	Create WhatsApp group and reach out for questions and concerns there first (informal quick chats)	
Communication norms	Discord for screenshots, code concerns, one point of reference for project items.	
0	1. Be kind to each other.	
Consideration norms	Be kind to each other.	
Cont improvement norms	Have a retrospective after each sprint.	
Cont. improvement norms	nave a retrospective after each sprint.	
Rewards	Everyone bring your own treat and we can have a celebratory meeting at the end!	
rewards	Exeryone bring your own treat and we can have a occupation y meeting at the orion.	
Sanctions	If you're more than 5min late without notice, 1pushup per minute late is owed.	
Candidate	a journment than community participation of the control of the con	
Signatures		
Scrum Master	Hanna Müller	
Product owner	Irene Kuo	
Product owner	Rebecca Greiner	
Software developer	Nikolas Rauscher	
Software developer	Irem Ozseker	
Software developer	Yash Bhesaniya	
Software developer	Filipe Borges	
Software developer	Kristi Kotini	
Software developer	Florian Hoffmann	
Software developer	Sandeepkumar Ramesh	

AMOS P5 - Planning Document Product Goal

Product Vision	Project Mission
An Al-powered chatbot that helps any user query and extract knowledge from uploaded document(s). Through generating knowledge graphs from a corpus of text, information and knowledge is organized in a smarter way that is able to reveal different insights that may not have been noticed before. The knowledge graph will include communities of concepts and can be used to uncover insights and links between seemingly disconnected concepts. Through querying knowledge graphs, users can more quickly gather the correct information and potentially gain additional understandings that are not noticeable without the graph communities.	The mission of this project is to create a MVP for the knowledge graph generation in order to visually see clusters of information and how they're linked. The knowledge graph will include a basic search function to query information. Core functionality will be ingesting user document(s), processing the data and extracting relationship entities through the use of LLMs, building and storing the knowledge graph, an interactive visual representation of the knowledge graph, and a basic search function for entities in the knowledge graph.

AMOS P5 - Planning Document Product Glossary

Definition
A knowledge base that uses a graph structure to represent the data with nodes as objects and edges as relationships between the nodes.
A piece of written content that provides detailed information, instructions, or explanations about a specific technical subject, product, or
process.
The latest standard for best practices in automotive software.
Key concepts, objects, or subjects extracted from text or data, forming the nodes of the knowledge graph.
Representations of entities within the knowledge graph, each node encapsulates information about a specific entity.
Connections between nodes in the knowledge graph, indicating relationships or associations between entities.
A type of machine learning algorithm that can perform a variety of natural language processing tasks.

AMOS P5 - Planning Document Sprint Goals

Sprint #	Sprint goal
1	None
2	None
3	None
4	Optional
5	Finish all basic components/functions in preparation for connecting them all for the end-to-end functionality (upload -> knowledge graph visualization).
6	MVP for mid-project with upload through 1st basic visualization of knowledge graph
7	Update UI and knowledge graph finetuning
8	
9	
10	
11	
12	
13	
14	
15	

AMOS P5 - Planning Document

Mid-Project Release plan

Sprint	Goal	Feature Name	Est. Size	Est. Remaining	Real Size	Real Remaining
Releas	0					
Total			124	124		
Sprints						
1	Getting started		0	124	0	124
2	Define technologies, create software architecture and user interfa	ace design	13	124	13	124
3	Setup project environment		16	111	14	111
4	Ingestion of documents and LLM setup with POC of data process	tings	32		31	
5	Preparation of individual functions to connect for the MVP	migo	32			
-	MVP for mid-project with upload through 1st basic visualization		02	00	O2	
6	of knowledge graph		31	31	31	34
	Sum					
Feature	es .					
1	Getting started	Setup feature board	n/a		n/a	
2	Define technologies, create software architecture and user interfa	Team logo	n/a		n/a	
		Create software architecture overview	5		5	
		Design user interface	8		8	
3	Setup project environment	Set up initial project environment (backend excluding LLM container)	8		8	
		,				
	Ingestion of documents and LLM setup with POC of data					
4	processings	PDF parsing into text	5		3	
		Text to .json chunks	3		3	
		Interface setup	3		3	
		Allow user to upload PDF document(s)	5		5	
		POC: Graph visualization	5		5	
		Setup Mistral locally: documentation	3		2	
		POC: Prompt template for LLM	3		5	
		Syntax checking for JSON and converting to graph format	5		5	
5	Preparation of individual functions to connect for the MVP	Update software architecture diagram and documentation	1		1	
		Prepare LLM setup for dev team	2		2	
		POC: combine graph pieces with LLM	8		8	
		Create record in database	5		5	
		LLM function	3		3	
		Generate graph button	5		5	
		CORS implementation	3		3	
		CI/CD improvements	2		3	
		HW: Build process video	3		2	

AMOS P5 - Planning Document

Mid-Project Release plan

Sprint	Goal	Feature Name	Est. Size	Est. Remaining	Real Size	Real Remaining
6	MVP for mid-project with upload through 1st basic visualization of knowledge graph	Save graph data User documentation Connecting components from documents to entities Deploy documentation Connect entities to graph data Generate graph visualization from database Technical/design documentation	8 3 5 3 5 5 5		8 3 5 3 5 5 2	
	125 —	■ Estimated burn-down				
	75 —					
	25 —					
	0	0 13 16 32 32 31				

AMOS P5 - Planning Document Final Project Release plan

Goal	Feature Name	Est. Size	Est. Remaining	Real Size	Real Remaining	
elease						
otal		141	141			
),tai		141	141			
prints						
7 Streamline UX and work on additional knowledge graph generation	tasks	26	141	26	141	
8 Update UI and knowledge graph fine-tuning		31	115			
9 Enhance graph visualization and LLM-usage		26	84	30	88	
10 Graph search functionality and UI improvements		32	58	32	58	
11 Finalize graph search and graph visualization		26	26			
12 Finish final project release and prepare for demo day						
Sum						
eatures						
7 Streamline UX and work on additional knowledge graph generation	tasks Linting/Formatting	3		3		
	Create landing page	3		3		
	View list/table of existing knowledge graphs	5		5		
	Create new knowledge graph button (link to current user flow)	2		2		
	Delete uploaded document from upload screen	3		3		
	Refine .json extraction from LLM results	3		3		
	Refine graph connections	3		3		
	Ordering size of nodes for graph visualization	3		3		
	Remove JanusGraph	1		1		
8 Update UI and knowledge graph fine-tuning	Update user interface pages to design theme	3		3		
	Allow users to delete knowledge graph	2		2	!	
	POC: Query knowledge graph (to help with evaluating it)	8		5		
	Improve visualization based on different node sizes	3		3		
	Experiment with different approaches	5		5		
	View knowledge graph from table list	2		1		
	Graph display text/node color + less overlapping of nodes	8		8		
9 Enhance graph visualization and LLM-usage	Clustering of nodes / topic modeling: attributes	5		5		
	Link entities to page	3		3		
	Run linting and fix any errors	2		2		
	Finetuning of prompt template and ontology - make it more abstract and more concise			3		
	Look deeper into centrality measures for making network more concise	3		3		
	Finetune force-based algorithm for node positions	2		5		
	Split view - to show more information on left side, graph on right	3		3		
	"Generate" button to link to generate graph for documents that only have been					
	uploaded	2		3		
	Refactoring: "delete uploaded document" button	3		3		
10 Graph search functionality and UI improvements	POC: Graph search with embeddings	8		8		
, ,	Hover over node, return page numbers	3		3		
	Display of most extracted entities	5		3		
	Clustering of nodes / topic modeling: coloring	3		3		
	Support multiple document formats	3		3		
	Find way to improve performance time	5		5		
	After LLM results, eliminate duplicate entities	5		8		
	Responsive web design	2		2		
	, , , , , , , , , , , , , , , , , , ,					
11 Finalize graph search and graph visualization	Demo day slide	2				

AMOS P5 - Planning Document Final Project Release plan

			Est.		Real	
Goal	Feature Name		Remaining	Real Size	Remaining	
	Demo day video	3				
	Follow up on graph search w/ embeddings POC	5				
	Bug: missing panel on graph visualization and layout algorithm 4 & 5	5	5			
	Bug: Page numbers start at 0 instead of 1	1				
	Cache graph visualization	5	i			
	Notification for delete from graph list	2	!			
	Work on graph clustering/coloring ambiguity issue	3	3			
12 Finish final project release and prepare for demo day	Bug: page numbers don't always show on hover					
	Info on types of graph in control center					
	Let user filter for giant component (most connected subgraph)					
	Clean-up codebase					
	HW: Finalize user, (technical) design, and build/deploy documentation					
	End-to-end testing of application and features					
	Finalize demo day workflow					
	Final project report					

AMOS P5 - Planning Document Definition of Done

#	Feature Definition of Done	Sprint Release Definition of Done	Project Release Definition of Done
	Acceptance criteria is satisfied	Release tag candidate builds and deploys properly	Project builds and deploys properly
			Proper documentation on how to use and build the
	Pull request to dev branch	All previous working features should still work properly	project is done
	Code-reviewed by peer		
	Approve code and merge into dev branch		
	Automated tests are run and passed		
	When necessary, update software architecture diagram/documentation and bill of materials		

AMOS P5 - Planning Document Documentation

Type	Link / reference

AMOS P5 - Planning Document

Bill of Materials

	Context	Name	Version	License	Comment
1	PDF text extraction	pypdf	v4.2.0	new BSD	pdf2text
2	Splitting text into chunks	LangChain	v0.1.17	MIT	
3	LLM	Mistral-7B Instruct	v0.2	Apache 2.0	No longer in use!
4	Locally running LLM	Ollama	v0.1.33	MIT	No longer in use!
5	Working with the data	pandas	v2.2.2	new BSD	
6	Generating graph from data	NetworkX	v3.3	new BSD	python package, this version requires Python 3.10 3.11, or 3.12.
7	Upload documents	Filepond	4.31.1	MIT	
8	Network service	Axios	1.6.8	MIT	
9	Visualization	D3	v7.9.0	ISC License (functionally equivalent to the BSD 2- Clause and MIT licenses)	
10	Visualization	Cytoscape	3.10.2	MIT	
	Visualization	Vis.js	v9.1.9.	Apache 2.0 / MIT	
	Visualization	G6	4.8.24	MIT	
	Operational database	Postgres	16.2	PostgreSQL license (similar to MIT)	
11	LLM (more powerful option)	Gemini	1.5	Google API Terms of Service	might switch to this LLM from the original one
	LLM (more powerful option)	llama3	llama3-8b- 8192	Groq API Terms of Service	
	Topic modeling	bertopic	0.16.2	OSI Approved :: MIT License	

AMOS P5 - Planning Document Planning Poker

Last Name	First Name	Value			
Ramesh	Sandeepkumar	3			
Hoffmann	Florian	3	3.00	OK	
Rauscher	Nikolas	3	0.00		
Ozseker	Irem	3			
Bhesaniya	Yash	3	0	No size	
Fabian Borges	Filipe Alexandre	3	1	Trivial size	
Kotini	Kristi	3	2	Small size	
			3	Medium size	
			5	Large size	
			8	Very large size	
			13	Too large (size)	
How to play planning poker					
1. Everyone type their number in	to their value field, don't hit return ye	t			
2. Someone, perhaps a product	owner, count down 3 2 1				
3. Then, everyone hit return to so	ubmit their value				