

	Knowledge Graph Extractor (Hella)
Online team meeting	https://fau.zoom-x.de/j/67111681334?pwd=LzdBM3lXeXhPTETWL3lGUUnFqbTAzZz09
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	...
Team T-shirt (white)	...
Team T-shirt (black)	https://www.shirtinator.de/s/pYjJO4qcR3u9lSKbgQdyiw
Additional materials	...
Team mailing list	oss-amos-proj5@lists.fau.de
Project notes	https://docs.google.com/document/d/1OlcUP4HQkkPC0CHgqSkg_3PN46-r5dKddH-FLOZh-uo/edit
Questions for Industry Partner	https://docs.google.com/document/d/1DsWOP9P-WQFEtSQg0-_vFGQ1AePdJhCbIhrcKZ2X8oE/edit

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#	Meeting Day	Product Owners	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	Yash Bhesaniya	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	Sandeepkumar Ramesh	Hanna Müller	Demo day!
15	2024-07-24	Irene Kuo, Rebecca Greiner	Everyone else	n/a	Hanna Müller	Retrospective

Goals	1. Finish tasks for each sprint on time.	
Meeting norms	1. Be on time! (send a msg in WhatsApp if you'll be late) 2. Show up (unless deathly sick) 3. Try to participate actively	
Working norms	1. Good comments/documentation of work so everyone can follow easily. 2. Don't do everything the day before it's due. 3. Reach out if you have questions, help each other out!	
Coordination norms	1. Make it clear on the feature board what you're working on. 2. If you're overwhelmed, communicate so we can reassign tasks.	
Communication norms	1. Create WhatsApp group and reach out for questions and concerns there first (informal quick chats) 2. Discord for screenshots, code concerns, one point of reference for project items.	
Consideration norms	1. Be kind to each other.	
Cont. improvement norms	1. Have a retrospective after each sprint.	
Rewards	Everyone bring your own treat and we can have a celebratory meeting at the end!	
Sanctions	If you're more than 5min late without notice, 1pushup per minute late is owed.	
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	

Product Vision	Project Mission
<p data-bbox="136 213 1108 331">An AI-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.</p> <p data-bbox="136 335 1108 480">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.</p>	<p data-bbox="1126 213 2096 301">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.</p> <p data-bbox="1126 333 2096 451">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.</p>

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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
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Sprint	Goal	Feature Name	Est. Size	Est. Remaining	Real Size	Real Remaining
Release						
Total			124	124		
Sprints						
1	Getting started		0	124	0	124
2	Define technologies, create software architecture and user interface design		13	124	13	124
3	Setup project environment		16	111	14	111
4	Ingestion of documents and LLM setup with POC of data processings		32	95	31	97
5	Preparation of individual functions to connect for the MVP		32	63	32	66
6	MVP for mid-project with upload through 1st basic visualization of knowledge graph		31	31	31	34
	Sum					
Features						
1	Getting started	Setup feature board	n/a		n/a	
2	Define technologies, create software architecture and user interface	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	
4	Ingestion of documents and LLM setup with POC of data 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	

A bar chart comparing 'Estimated burn-down' (blue bars) and 'Real burn-down' (red bars) for six different values of x. The y-axis represents a numerical value from 0 to 125 in increments of 25. The x-axis labels are 0, 13, 16, 32, 32, and 31. For x=0 and x=13, both values are approximately 124. For x=16, both are approximately 110. For the first x=32, the estimated is approximately 95 and the real is approximately 97. For the second x=32, the estimated is approximately 63 and the real is approximately 66. For x=31, the estimated is approximately 31 and the real is approximately 34.

x	Estimated burn-down	Real burn-down
0	124	124
13	124	124
16	110	110
32	95	97
32	63	66
31	31	34

Sprint	Goal	Feature Name	Est. Size	Est. Remaining	Real Size	Real Remaining
Release						
Total			181	181		
Sprints						
1	Getting started		0	181	0	181
2	Define technologies, create software architecture and user interface design		13	181	13	181
3	Setup project environment		16	168	14	168
4	Ingestion of documents and LLM setup with POC of data processings		32	152	31	154
5	Preparation of individual functions to connect for the MVP		32	120	32	123
6	MVP for mid-project with upload through 1st basic visualization of knowledge graph		31	88	31	91
7	Streamline UX and work on additional knowledge graph generation tasks		26	57	26	60
8	Update UI and knowledge graph fine-tuning		31	31		
9	Enhance graph visualization and LLM-usage					
10	Additional graph search and knowledge graph fine-tuning					
11	Bug fixes and last fine-tuning tasks					
12	Finish final project release and prepare for demo day					
	Sum					
Features						
1	Getting started	Setup feature board	n/a		n/a	
2	Define technologies, create software architecture and user interface design	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	
4	Ingestion of documents and LLM setup with POC of data 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	

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	8		8	
		User documentation	3		3	
		Connecting components from documents to entities	5		5	
		Deploy documentation	3		3	
		Connect entities to graph data	5		5	
		Generate graph visualization from database	5		5	
		Technical/design documentation	2		2	
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			
		Allow users to delete knowledge graph	2			
		After LLM results, eliminate duplicate entities	5			
		POC: Query knowledge graph (to help with evaluating it)	8			
		Link entities to page	3			
		Improve visualization based on different node sizes	3			
		Experiment with different approaches	5			
		View knowledge graph from table list	2			
9	Enhance graph visualization and LLM-usage	Graph display text/node color + less overlapping of nodes				
		Find way to improve performance time				
		Finetuning of prompt template and ontology - make it more abstract and more concise				
		Look deeper into centrality measures for making network more concise				
		force-based algorithm for node positions				
		Split view - to show more information on left side, graph on right				
		"Generate" button to link to generate graph for documents that only have been uploaded				
		Refactoring: "delete uploaded document" button				
		Refactoring: clean up code base				
		Clustering of nodes / topic modeling: attributes				
		Progress bar for upload page				
10	Additional graph search and knowledge graph fine-tuning	Follow up on POC of graph search - implement functionality for user				
		Clustering of nodes / topic modeling: coloring (#106)				
		Another iteration of knowledge graph prompt fine-tuning (#104)				
		Graph search: return pages and text chunks (#105)				
		If graph structure analysis/centrality measures haven't been applied, choose what's best and apply them (#121)				
		Draggable nodes				
		Bug fixes				

Sprint	Goal	Feature Name	Est. Size	Est. Remaining	Real Size	Real Remaining
11	Bug fixes and last fine-tuning tasks	Demo day slide				
		Demo day video				
		Bug fixes				
		Final iteration of knowledge graph fine-tuning				
		Graph search: see if there's a way to make returned results more concise				
		Clean-up codebase				
12	Finish final project release and prepare for demo day	Finalize user, (technical) design, and build/deploy documentation				
		End-to-end testing of application and features				
		Finalize demo day workflow				
		Final project report				

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	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	

Last Name	First Name	Value					
Ramesh	Sandeepkumar	3		3.00	OK		
Hoffmann	Florian	3					
Rauscher	Nikolas	3					
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 into their value field, don't hit return yet							
2. Someone, perhaps a product owner, count down 3.. 2.. 1..							
3. Then, everyone hit return to submit their value							