Monada Dominion

Challenge Debriefing

VINO AI, a heuristic problem-solving tool

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Introductie (Nederlandse Versie)

"AI Problem Solving for Open Learning" oftewel "VINO AI" is een project of concept bedacht door Artur Kraskov, een delta-student. Samen met Shallwin Silvania hebben zij onderzoek gedaan en een raamwerk geconceptualiseerd dat, ongeacht de aard van het probleem, verdeeld kan worden in 12 gedefinieerde stappen met de "Universal Matrix" als fundamentele basis. Zij stellen voor dat elk concept of probleemstelling een vorm van compleetheid kan bereiken, binnen de limitaties van ons kunnen.

Het doel binnen de context van Open Learning is om studenten met hun projecten te begeleiden in hun leerplan, afhankelijk van hun doelstellingen, persoonlijke ervaringen en concrete realisaties (of meer of minder). Door dit hulpmiddel te gebruiken in de vorm van 12 symbolen, kunnen zij door hun probleemstelling navigeren en op maat elk deel van het project/probleem oplossen met behulp van VINO AI als gids. VINO AI wijst wat je zou kunnen doen om iedere student persoonlijk te kunnen helpen en geeft helderheid over welke acties zij kunnen ondernemen om hun wensen te realiseren.

Onze rol hierin is om het te realiseren, en te proberen het project te implementeren binnen Open Learning om als basis te dienen voor een toekomstige all-round probleemoplossende tool die andere raamwerken kan toepassen om mensen te helpen hun doelen te bereiken.

Introduction

VINO AI is a project of a student from Fontys ICT, Artur Kraskov. He appears to be working entirely on his own. There is already an impressive amount of research and work done on this project. He is very passionate about the tool and assumably wants to speed up its development, that’s why he is looking for an extra pair of hands (or multiple pairs).

VINO AI is supposed to help Open Learning students with problem solving and decision making by breaking down complex tasks into manageable steps. It appears to be based on the Universal Matrix framework. Although the project is submitted as a companion for Open Learning students, from another presentation it is also suggested it could also be extended to any field, or profile where problem-solving is required.

Artur highlighted several areas where students could contribute to the project: back-end, front-end, AI, RAG, LLM, GPU inference, deployment, user-journey, UI/UX research and academic research (heuristics, algorithms, math). However, he defines two main problems that he is working on right now (copy-pasted from the project description):

- development of an advanced RAG system and LLM agentic network (back end)
- dynamic and generative UI, Research & Development of algorithms to generate UI for student processes (Celonis style process mining, data visualization, knowledge graphs, information design)

Stakeholder

A first interview still needs to be arranged with Artur.

Context Analysis

Context

Open-learning environments often expose students to overwhelming volumes of complex information. This complexity leads to difficulties in comprehension, task initiation, and time management.

Market Analysis

Diverse solutions exist: from computation engines and business intelligence to educational aids, coding and conversational assistants.

Common Patterns:

- Many tools excel in specialized areas (e.g., data analytics, corporate training, research assistance).
- Most offer strong feature sets—data visualization, summarization, simulation, NLP interfaces.

Limitations:

- Narrow context understanding (Wolfram Alpha)
- Restricted adaptability (Notion AI limited to Notion)
- Complex setup or learning curve (Curiosity AI, ProSolvr)
- Limited depth in problem-solving beyond their core use case (Summari, Socratic)
- Growing price, requires coding skills to expand functionalities and integrate, impacts budget (chatGPT, openAI API, Celonis, Claude with MCPs, Agentic Programmers with MCPs like: Aider, Roo Code, Cline, etc.)

Target Audience

Open-Learning Students

Example from the presentation:

Emma, a 21-year-old ICT student

- Loves AI and robotics
- Feels stuck with boring or overly complex tasks (e.g., lengthy literature reviews, stakeholder documentation, sprint planning).

Struggle with Complexity → Reduced Motivation → Dropped Projects → Poorer Learning Outcomes

With VINO AI Artur believes that he can satisfy Fontys OL students' demand in growth, education, problem solving and help them take advantage of modern fast changing and data

intensive digital environment. We see our product as a critical tool to cope with overwhelmed media and polluted media-ecology.

IT Analysis

Key Trends:

- The AI companion market is booming, with a projected value of $7.9B by 2032, driven by demand for personalized AI and digital transformation.
- Personalized learning and educational support are key growth areas within this market.
- Open learning, which emphasizes flexibility and learner autonomy, is gaining popularity, increasing the need for tools that aid in navigating and utilizing information.

Existing Solutions:

Several AI tools offer functionalities relevant to VINO AI, including Wolfram Alpha (computation), EdApp (corporate training), Replika (emotional support), Sana AI (personalized e-learning), Celonis (process mining), ChatGPT (conversational AI), Notion AI (structured environments), and Socratic (educational problem-solving). Each has strengths and limitations, creating an opportunity for VINO AI to differentiate itself by offering a more comprehensive, user-friendly, and adaptable solution for open learning. [1]

Conclusion & Design Challenge

Design an AI-powered software tool **to enable** Fontys OL students **in** their education and growth within a fast-changing, data-intensive digital environment **to** support decision-making and streamline navigation inside project or problem context **in/with** enhanced cognition using heuristic-based methods, visual proofs, logical chains, and standardized notation and representation of processes.

“How can an AI-powered software tool enable Fontys OL students in their education in a fast-changing digital environment to support decision-making and streamline navigation with enhanced cognition?”

Works Cited

[1] Silvania, Shallwin. (2024). VINO AI - Market Research Report. 10.13140/RG.2.2.23485.47841.