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Chatbot AI: Learning Assistant for the GÉANT eAcademy

NETDEV Incubator Project Proposal

Abstract

This document presents the concept of the AI Chatbot solution to be developed under the WP6 NetDev Incubator. It presents the rationale for developing the projects, main outputs, resources and supporting organisations in compliance to the given template.

Project Proposal

1. **Name and Organisation -** Marcin Wolski, marcin.wolski@man.poznan.pl, Poznan Supercomputing and Networking Center

2. **Title -** Chatbot AI: Learning Assistant for the GÉANT eAcademy

3. **Rationale**

The GÉANT community benefits from the GÉANT Network Automation eAcademy (eAcad in short) and can improve their professional competences or boost their technical skills. They also have access to a vast array of courses, learning materials, or related training content offered by Internet learning platforms.

The plethora of available content often makes it difficult to find the right course, define the best learning path, or access a piece of material that would fit their specific needs. Moreover, the availability of supporting tools that facilitate browsing or content search does not solve the problem. As a result, scholars can quickly lose motivation to study remotely or even give up on taking up this form of training altogether.

Among the questions and concerns that naturally arise for those who use learning platforms are, for example, "What courses touch on subject X?" or "I would like to explore subject Y in more depth—where should I start?". Our solution to overcome these issues is Chatbot AI, a Learning Assistant for the entire education path in the GÉANT eAcademy.

4. **Output**

   1. Software and platform: The ready-to-be-used Chatbot solution with core functions that is a proof-of-concept of learning bot for the GN eAcademy. This solution will comprise UI widget + server side functions available via API.

   2. Final report: a document outlining the problem being solved, the concept of the solution, the simplifications adopted due to the limitations of the 'incubator' format and a description of the work required to achieve a fully-fledged product.

   3. Online info-share (showcase): the presentation will summarize the entire project and present the most important added value that eAcademy gains thanks to the developed solution.

In addition, an onsite demo or presentation at a selected conference could be shown after the project is completed, depending on available budget and overall project results.

5. Users - The target audience of the project will be mainly the GN5.1 community members, who takes advantage of the eAcademy to extend their knowledge and improve individual skills.

6. Value - The overall aim of the Chatbot activity is to provide students with comprehensive assistance in the whole learning path, which, in turn, lets the students experience the full value of the learning materials available on the eAcad. the Bot should initiate interaction with a student taking into account the given context, e.g., by asking a novice user a question to encourage them to take the course or by asking the participant about their opinion on topic X after they have already completed the course. Furthermore, the Bot should be able to indicate

to what extent an issue X is covered at the presentation or to randomly ask about selected topics described in a specific course.

7. Team

PSNC will be the main contributor to the project. The PSNC team has knowledge and experience in delivering AI-based applications throughout the entire lifecycle: from design and implementation to deployment and maintenance. The team has been working on advanced Natural Language Processing models (NLP) and Chatbots which were applied in scientific domains and for simplifying official documents

Name	Organisation	Role in the project
Maciej Łabędzki	PSNC	Software team leader, system architect
Antoni Klorek	PSNC	AI/NLP software developer
Mikołaj Kruś	PSNC	AI/NLP software developer
Marcin Rochowiak	PSNC	Software developer (Backend services)
Tomasz Weiss	PSNC	Front-end developer (User Interface)

8. Time - 6 months

9. Resources

Manpower

Name	Organisation	Person months
Maciej Łąbędzki	PSNC	2
Antoni Klorek	PSNC	3
Mikołaj Kruś	PSNC	3
Marcin Rochowiak	PSNC	3
Tomasz Weiss	PSNC	1
TOTAL		12

In addition, the Manpower requested by organizations that will support the work in the design, evaluation and deployment of the chatbot (detailed information about PMs is presented in p.13)

Travel budget

Travel and accommodation budget for a kick-off meeting of this project. It is assumed the meeting takes place in Poznan, Poland (PSNC premises) and 3 people representing the supporting organization attend it.

Name	Organisation	Budget
Travel, accommodation for 3 people	GÉANT Assn, UoB, UKIM	4500 EUR

Infrastructure

PSNC will provide the infrastructure necessary to develop the AI chatbot operating in a web browser. As part of this infrastructure, PSNC will provide a platform hosting the chatbot application and language model, which are at least 3 virtual machines, DNS domains, security systems, and graphical processing units (GPUs) in the amount necessary for AI calculations - at least 1, depending on the actual demand, which will be precisely determined during the course of the work.

10.   **Intellectual Property Rights (IPR)** - As a proposer I declare that my submission is not infringing any IP rights of others.

a.   Does any code or previous work exist that is the subject of an existing IPR? Yes

User Interface (UI) and Widget (a software component that can be embedded in other web pages) of the Chatbot inherits some parts on the source codes, which were developed in the EOSC Future project (https://eoscfuture.eu/). The source codes are released under the MIT License (https://gitlab.pcss.pl/eosc-extra/eosc-chatbot)

11.   **Information about gathering and processing any personal data:**

Will you be processing any personal data for this project? **No**

12.   **Contribution to an existing GÉANT project service -** The Chatbot application is going to be integrated with GÉANT eAcademy (Moodle platform) to lead the interactive session with students.

13.   **Organisations supporting the proposal** - To be filled for each organisation:

1. GÉANT Association

a.   Your Name: Dom Mayerl

b.   Your Organisation: GÉANT Association

c.   Will you implement the work results in your own organisation? Yes – this work will directly enhance the Network eAcademy Service and the eAcademy platform as a whole. Providing users with more insightful ways to engage and explore the material.

d.   How much of an FTE will your organisation dedicate to work on this project? 1-2 days per month over 6 months (6-12 days total)

e.   Would you work on this proposal even if not being paid from the GN5-1 project? No. Without this development within the project GLAD would not be able to afford to develop and implement an AI Chatbot into the eAcademy.

2. University Ss. Cyril and Methodius in Skopje

a.   Dom Mayerl

b.   University Ss. Cyril and Methodius in Skopje / Faculty of Computer Science and Engineering

c.   Yes, we are interested to implement work results (if applicable) at our organisation

d.   We can dedicate 0.1 FTE for work on this project.

e.   Yes, we would work on this proposal even if not being paid from the GN5-1 project

3. University of Belgrade (Amres)

a.   Your Name: Branko Marović
b.   Your Organisation: UoB/AMRES
c.   Will you implement the work results in your own organisation?
Yes, although not directly and immediately. However, if it appears useful for eAcademy, it could be used by the UoB to enhance access to a multi-institutional catalogue of academic courses in English. With support for Serbian, AMRES could utilise it for its online self-help in the Help Desk, drawing from its knowledge base.
d.   How much of an FTE will your organisation dedicate to work on this project? 1 PM.
e.   Would you work on this proposal even if not being paid from the GN5-1 project? Yes, but reduced to 0.5 PM.

4. Poznan Supercomputing and Networking Center (PSNC)

a.   Your Name: Michał Zimniewicz
b.   Your Organisation: PSNC
c.   Will you implement the work results in your own organisation? Yes
d.   How much of an FTE will your organisation dedicate to work on this project? 0,5 PM, to deploy and accommodate the Chatbot Widget in the Moodle
e.   Would you work on this proposal even if not being paid from the GN5-1 project? Yes