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Action plan for inter-European Universities activities regarding AI

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LIST OF ACRONYMS

· *ATHENA: Advanced Technology Higher Education Network Alliance*

· *E3UDRES2: Engaged and Entrepreneurial European University*

· *EELISA: European Engineering Learning Innovation and Science Alliance*

· *ENLIGHT: European University Network to promote equitable quality of life, sustainability and global engagement through higher education transformation*

· *EUGLOH: European University Alliance for Global Health*

· *EUNICE: Artificial Intelligence*

· *neurotech EU: Neurotechnology European University*

· *RUN-EU: Regional University Network*

· *REUNICE: EUNICE Research*

· *TAILOR: (a network of research excellence centres developing the scientific foundations for Trustworthy AI through the integration of Learning, Optimisation and Reasoning)*

· *AI: Artificial Intelligence*

· *CNN: Convolution Neural Networks*

· *NLP: Natural Language Processing*

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1. Purpose of the document

The purpose of the document is to develop an action plan for research in Artificial Intelligence (AI) that will enable EUNICE (European University of Customised Education) and other transnational alliances of European Universities to collaborate and cooperate on innovative applications of AI in various fields. The plan will detail specific steps and strategies for connecting EUNICE with other European University alliances, with a focus on TAILOR (a network of research excellence centres developing the scientific foundations for trustworthy AI through the integration of learning, optimisation and reasoning), one of four AI networks established through the H2020 programme.

The joint action plan aims to provide a roadmap for how universities within and across European alliances can collaborate to leverage the power of AI in a variety of scenarios, such as healthcare, finance, and transportation. The plan will identify areas of synergy and collaboration, enabling partners to combine their strengths to tackle complex challenges in a more integrated and holistic manner. This task will define the types of collaboration and methodologies for acquiring knowledge about existing, relevant projects through cross-networking with ongoing EU research networks in AI.

In summary, the action plan presents an outline of the collaboration opportunities for AI applications between EUNICE and other European university alliances.

To attain this aim, four areas of cooperation have been proposed, which include team collaboration, community collaboration, network collaboration, and cloud collaboration, each employing AI techniques to facilitate the acquisition of alliance partners. The action plan also underscores the significance of European alliances conducting research in the areas of AI applications in medicine, ethics, smart buildings and cities, and cybersecurity.

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2. Introduction

Under the term AI, a set of methods, algorithms, and, in recent years, a collection of technologies are grouped that enable machines to sense, understand, plan, act, and learn with intelligence that seems similar to humans (Yongjun i inni, 2021). These algorithms and technologies enable AI systems to perform tasks, mostly in dynamic environments, that classical approaches are not able to solve in an acceptable delay. Nowadays, AI mechanisms are utilized in a large area of applications, such as perceiving environments, recognizing objects, contributing to decision-making, solving complex problems, learning from past experiences, playing games, and mimicking patterns. These capabilities are used to perform tasks such as driving a car or using facial recognition to unlock device screens.

A particular type of AI that has been trending in recent years benefits from the power of calculations and access to very large sources of data. This type of AI is based on statistics and learning through rewards, and we can call it numerical AI.

The field of analogic AI can be divided into five different types, which are shown in Figure 1 (Bekker, 2019).

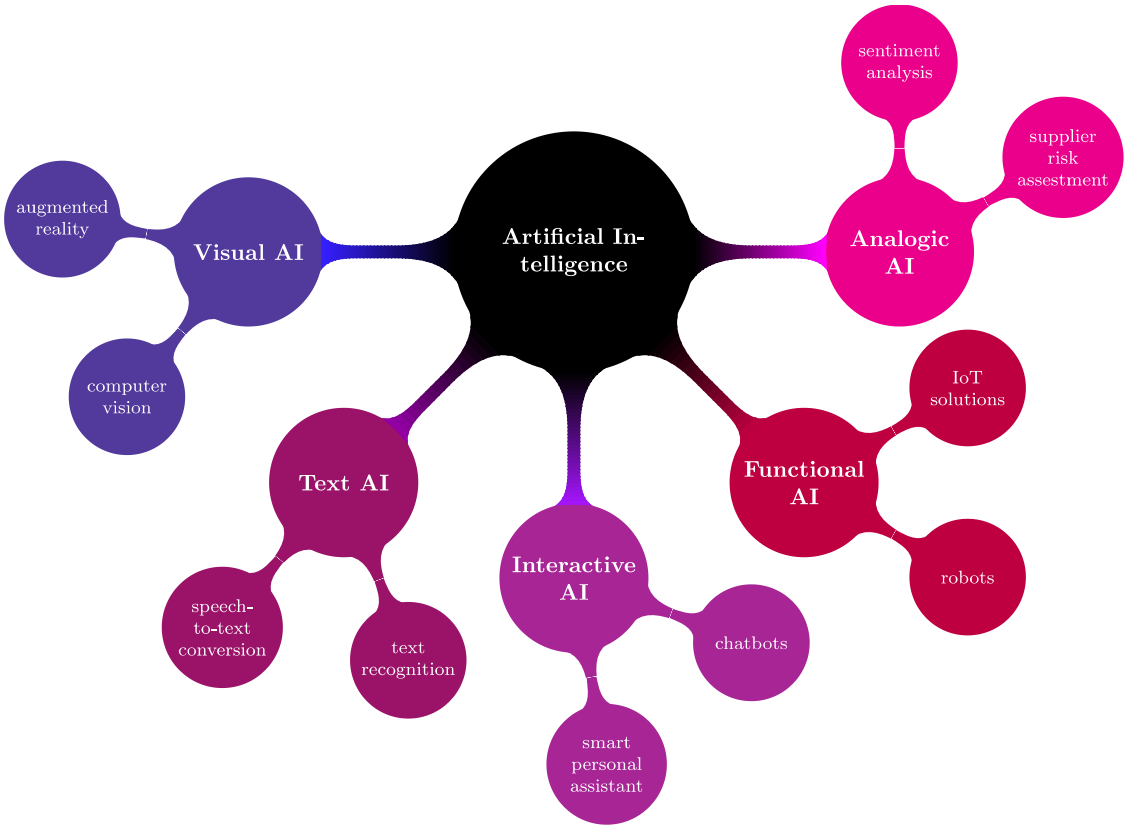

Figure 1 Types of artificial intelligence [2]

Analogic AI is a type of AI that uses machine learning, including advanced deep learning techniques, to analyse large amounts of data and identify patterns and dependencies. This allows businesses to gain insights and make data-driven decisions based on the results. Some examples of an analogic AI in action include "sentiment analysis", which involves analysing text to determine the sentiment of

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the writer. In fact, large sets of text are already classified by humans, and an AI tool converts them to numeric inputs. Then, a neural network trains itself to reproduce the classification, making it able to classify other text based on the same vocabulary. Another example is supplier risk assessment, which involves analysing data about suppliers to assess their risk level based on learned examples. Symbolic AI can also be used for tasks such as inventory optimization and demand forecasting.

Functional AI uses the same mechanism as the analogic AI in that it also analyses large amounts of data to identify patterns and dependencies. However, whereas symbolic AI focuses on classification, recommendations, or insights, functional AI can take actions based on its decision results. For example, a functional AI system might be able to detect or foresee a machine failure from sensor data, and then automatically shut down the machine to prevent further damage.

Long based on "classical AI" made of rules, interactive AI now uses frequencies of word occurrence and enables businesses to automate communication without sacrificing interactivity. This includes chatbots (like Chat GPT, Barde, etc.) and smart personal assistants that can understand natural language and respond appropriately. Interactive AI can be used for a variety of tasks, from answering customer service questions to facilitating corporate processes such as vacation booking. By automating these tasks, businesses can save time and increase efficiency.

Text AI enables businesses to analyse and process large amounts of text data, including speech-to-text conversion, machine translation, and content generation. This type of AI can be used to create internal corporate knowledge bases that can imitate natural language and provide relevant answers to user questions. Although numerical AI does not deal with the meaning of the words it manipulates, its algorithms learn how to classify texts very efficiently. For example, it is possible to teach an AI to detect fake news or text written by a particular author.

Finally, Visual AI is a type of AI that enables businesses to analyse visual data, such as images and videos. This AI uses particularly complex neural networks named CNNs (Convolutional Neural Networks). This includes tasks such as object recognition, classification, and sorting. Visual AI can be used for a variety of applications, from helping insurers estimate damage based on photos of damaged cars to grading apples based on their colour and size. Other applications of visual AI include computer vision and augmented reality. For example, a retailer might use visual AI to recognize customers' faces and provide personalized service based on their purchase history (Bekker, 2019).

While each technology is evolving independently, their integration with other technologies, data, analytics, and automation can transform businesses and assist them in achieving their goals, such as optimizing supply chains or enhancing customer service.

The field of numeric artificial intelligence encompasses a broad range of techniques, including linguistics, bias analysis, computer vision, planning, robotic process automation, natural language processing, decision science, and more. To

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gain a deeper understanding of these various subfields, let us examine some of the major branches of numerical AI in more detail. Figure 2 presents nine of these major branches (Marizel i Ma. Louella, 2018).

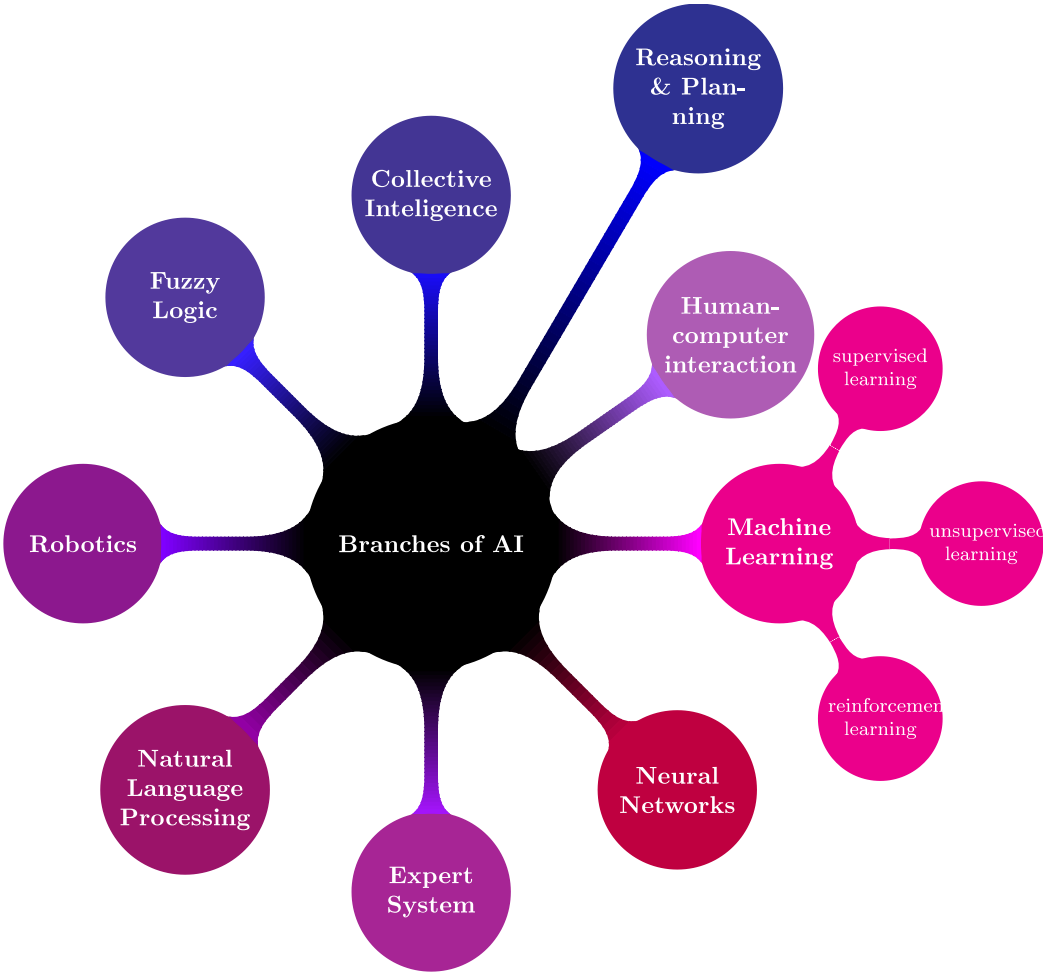

Figure 2 Nine branches of Artificial Intelligence (Marizel i Ma. Louella, 2018)

While each numerical AI technology is evolving independently, their integration with other technologies, data, symbolics, and automation can transform businesses and assist them in achieving their goals, such as optimizing supply chains or enhancing customer service.

Historically, AI has been divided into two parts: numerical AI and what we can call 'analogic' AI, which is based on facts and rules. Although symbolic AI receives less attention today than numerical AI, it is still used in domains where meaning and the need for certainty are important. With symbolic AI, we have notions of reasoning, collective intelligence, human-machine interactions (which involve understanding the desires of users and adapting to their personalities), and knowledge management (including cognition and sense). The tools are not based on statistics, objective functions, or numerical rewards. In this type of AI, we can find SAT solvers (solvers that satisfy a set of constraints), temporal logic (for perfect planning), rules-based systems (for deduction and explanation), and multi-agent systems (for simulating

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complex systems and automating complex exchanges such as negotiation and voting).

So, on one hand, we have numerical AI that is based on statistics and can deal with a huge amount of data with an acceptable margin of error. On the other hand, we have symbolic AI that is based on the notion of rules, proofs, and truth. These two aspects of AI, which have coexisted since the appearance of the first numerical AIs (in the 1950s), are increasingly used together. Numeric AI gives a quick and efficient result (for example, classification), and symbolic AI is then used to provide an explanation for this result.

Due to its ability to deal with large amounts of data, create profiles, identify associations of behaviour and ideas, and categorize data (and people if the data represents humans), the ethical aspect of a project involving AI is very important (https://www.unesco.org/en/artificial-intelligence/recommendation-ethics). More so than in any other projects, we should ensure that the minimal set of personal data is asked for and used strictly with the user's agreement. In projects involving AI tools, we should pay particular attention to not make any involuntary, socially or legally unapproved classifications.

The further part of the report will identify areas of collaboration between European university alliances and the specific AI applications in which these inter-European associations conduct research.

3. How can AI be applied to facilitate collaboration in European university alliances?

When it comes to collaboration between European alliances, it can be a powerful tool for achieving shared goals, promoting innovation, and fostering growth in the academic community. One way that European alliances can collaborate is by sharing ideas and resources to tackle common research challenges. By working together, universities can pool their expertise and resources to make greater strides in their respective fields. In addition, collaboration can also be beneficial in promoting cultural exchange and diversity among universities. By collaborating on academic projects, European universities can bring together students and faculty from different backgrounds and nationalities, promoting cross-cultural understanding and tolerance. Another way that European universities can collaborate is by partnering to offer joint degree programs or study abroad opportunities. By working together, universities can offer students a more diverse range of educational opportunities and prepare them for success in an increasingly globalized world. Overall, collaboration is an important strategy for promoting growth, innovation, and success in the academic community. By embracing collaboration, European universities can work together to achieve common goals and make important contributions to the world of academia.

AI can play a crucial role in facilitating effective collaboration. With AI, teams can be created where individual skills and behaviours complement each other, leading

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to greater productivity and success. By using machine learning and predictive data analysis, management can identify participants who are likely to work well together and create a cohesive work environment that drives engagement. Additionally, AI can be used to improve communication between participants working in the same domain, allowing for more efficient and effective collaboration. With these AI-powered tools, organizations can achieve their goals more effectively and create a culture of collaboration that drives innovation and growth.

Taking into account the purpose of the document (Section 1) and the opportunities AI offers to facilitate collaboration, we will describe four identified areas of collaboration later in this chapter, including: team collaboration, community collaboration, network collaboration, and cloud collaboration. Each of these four types of collaboration offers its own unique benefits and challenges, and has the potential to contribute to the success of research and innovation efforts in different ways. By understanding the distinct characteristics of each type of collaboration, we can more effectively harness their power and maximize their potential impact in collaboration with European university alliances.

3.1. Team Collaboration

Team collaboration between researchers from different European university alliances can take place in several ways. One way is by sharing ideas and resources to tackle common research challenges. This can be achieved through joint research projects, where researchers from different universities come together to work on a specific research question or problem. Another way is by participating in interdisciplinary research teams, where researchers from different academic disciplines come together to work on a shared research goal (Herman).

AI can play a crucial role in facilitating effective collaboration between researchers from different European university alliances. When a team of researchers is created (either 'classically' or with the help of Text AI used to identify potential research collaborators based on their research interests and expertise, as well as their publication history and citation network as presented in part 3.2), Analogic AI can be used to facilitate communication between researchers by providing real-time translation services and enabling remote collaboration through virtual collaboration tools and workflow rules and protocols of cooperation. Additionally, Text AI can be used to analyse research data and generate insights that can inform future research collaborations and identify new research directions. Overall, AI can help to create a more efficient and effective research collaboration process by identifying potential collaborators, facilitating communication, and generating insights from research data. By embracing AI-powered tools, researchers from different European university alliances can work together more effectively and make important contributions to their respective fields (Foffano, Scantamburlo i Cortés, 2022) (Tlili i Burgos, 2022) (Yang, Irfana i Samopa, 2014) (Kallel i Chniter, 2019).

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3.2. Community Collaboration

Community collaboration among researchers from different European university alliances can be challenging due to differences in language, culture, and research practices. However, AI can be used to facilitate collaboration and help researchers work together more effectively. One way to use AI to facilitate collaboration is to identify potential collaborators. Text AI algorithms (like those used in NLP (Natural Language Processing)) can efficiently analyse research papers, grant proposals, and other documents to identify researchers with similar research interests and expertise. This can help researchers from different university alliances find each other and collaborate on joint research projects. More than a simple search engine, Text AI algorithms can be used proactively by analysing different documents and proposing ideas of collaboration between authors and users before they request it. Another way to use AI is to enhance communication. After being trained on a sufficient volume of texts, AI-powered chatbots can be used to answer questions and provide dedicated information, making it easier for researchers to find links to partners. Additionally, Text AI can be used to translate between different languages, allowing researchers who speak different languages to communicate more effectively. Data sharing is another area where AI can be useful. AI algorithms can be used to analyse and organize large datasets, making it easier for researchers to share and collaborate on data. This can be particularly useful in interdisciplinary research projects that involve researchers from different university alliances. Finally, AI can be used to manage joint research projects. AI algorithms, like agents, can receive the mission to track project milestones, manage timelines, and coordinate tasks among researchers from different university alliances. This can help ensure that the project stays on track and that all researchers are working together effectively. Overall, AI has the potential to be a powerful tool for facilitating community collaboration among researchers from different European university alliances. By using AI to identify potential collaborators, enhance communication, facilitate data sharing, and manage joint research projects, researchers can work together more effectively and make important contributions to their respective fields. By using AI to identify potential collaborators, enhance communication, facilitate data sharing, and manage joint research projects, researchers can work together more effectively and make important contributions to their respective fields (Herman) (Foffano, Scantamburlo i Cortés, 2022) (Tlili i Burgos, 2022) (Just, Cornwell i Huhns, 2005) (Besimi, Çiço i Besimi, 2018) (Nilufar i Abhari, 2022).

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3.3. Network Collaboration

Network collaboration is another important aspect of community collaboration among researchers from different European university alliances and can take many forms, including social media tools and other virtual collaborative platforms (Herman). AI can be used to analyse the relationship, considering factors such as the period of the year, domain, and respect for privacy, between partners, and/or between partners and collaborators. Thus, AI can facilitate the choice between collaboration networks by helping researchers identify risks of malfunctioning and providing tools to help them communicate, share data, and evaluate the effectiveness of the collaboration. Individual researchers can take action in their own self-interest by contributing to the network and making themselves and their area of expertise known to other members. By doing so, they can establish relationships and partnerships that can lead to collaborative research projects and other opportunities. Social media tools, such as social bookmarking tools, can be particularly useful for network collaboration among researchers from different European university alliances. These tools allow researchers to share links to websites and other resources that can be helpful to other network members working on similar topics. As the network grows and evolves, these resources can become a valuable source of information and collaboration for researchers from different university alliances. AI can also be used to facilitate network collaboration by analysing data on the research outputs, collaborations, and impact of the network. This can help identify areas for improvement and optimize the network's effectiveness. Like for 'Community Collaboration', AI-powered chatbots and other virtual collaborative platforms can also be used to facilitate communication and data sharing among researchers in the network (Foffano, Scantamburlo i Cortés, 2022) (Tlili i Burgos, 2022).

3.4. Cloud Collaboration

Cloud collaboration can also be an effective method for collaboration among researchers from different European university alliances. With the ability to access, read, and edit documents in real-time, cloud collaboration enables multiple researchers to work on the same documents simultaneously and ensures that all users have access to the latest version of the document. For example, researchers from different university alliances can collaborate on a research paper or project by storing their documents in a cloud-based collaboration tool. This allows remote researchers to access and edit the documents from anywhere, without having to worry about version control or compatibility issues (Herman). Artificial intelligence (AI) represents a powerful tool for further enhancing cloud-based collaboration among European university alliances. By utilizing analytic AI algorithms, it becomes possible to

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effectively analyse data generated by cloud collaborative tools. This includes building document classifications that facilitate easy access, as well as measuring user interactions and changes made to documents. Such data can offer valuable insights into collaboration effectiveness, highlighting areas for improvement, and favouring access to the most trending topics of interest. Furthermore, AI-powered chatbots can be implemented to support communication and collaboration efforts among researchers. These chatbots are capable of providing the latest document version, answering research-related questions, and offering guidance on collaborative processes (Foffano, Scantamburlo i Cortés, 2022) (Tlili i Burgos, 2022) (Huang, 2021).

In addition, artificial intelligence (AI) can significantly enhance the security of cloud-based collaboration among European university alliances. By utilizing AI-powered security systems, it becomes possible to prevent unauthorized access to collaborative tools and ensure that only authorized users have access to sensitive documents. Moreover, these systems are capable of detecting and alerting administrators to any unusual or unexpected behaviours or requests, allowing for swift action to be taken in the event of a potential security breach. Overall, the implementation of AI in cloud collaboration is a highly effective measure for protecting valuable intellectual property and maintaining the confidentiality of sensitive data (Tadeo i inni, 2021).

In conclusion, cloud collaboration represents a highly effective method for enabling researchers from diverse European university alliances to work together seamlessly. With the help of AI, collaborative efforts can be further enhanced by analysing data, streamlining communication, and bolstering security protocols. By utilizing these powerful tools, researchers are better equipped to collaborate and make significant strides in their respective fields of study, leading to important breakthroughs and new discoveries (Foffano, Scantamburlo i Cortés, 2022) (Tlili i Burgos, 2022) (Huang, 2021) (Tadeo i inni, 2021).

In summary, there are four types of collaboration that can be used by researchers from different European university alliances: interpersonal collaboration, community collaboration, network collaboration, and cloud collaboration. Interpersonal collaboration involves direct communication and interaction between researchers, while community collaboration involves collaboration within a specific community or research field. Network collaboration relies on virtual communication and referrals to find potential collaborators, while cloud collaboration involves accessing, reading, and editing documents in real-time through a cloud-based collaboration tool.

Figure 3 presents a model that sheds light on the different methods of collaboration, highlighting the need for joint efforts to implement these practices at the EUNICE universities. By implementing these practices, researchers can work together more effectively and make important contributions to their respective fields.

It is crucial to reiterate that the ethical dimension must be taken into account throughout the entire process of designing AI tools, and special precautions must

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be taken during testing to prevent any undesired outcomes upon deployment. Careful consideration of the ethical implications of AI is essential to ensure that these powerful tools are used responsibly and ethically. In addition, conducting thorough testing prior to deployment is critical to avoid potential negative consequences that could arise if AI is not implemented properly. By taking these important steps, we can leverage the full potential of AI while minimizing the risks associated with its use.

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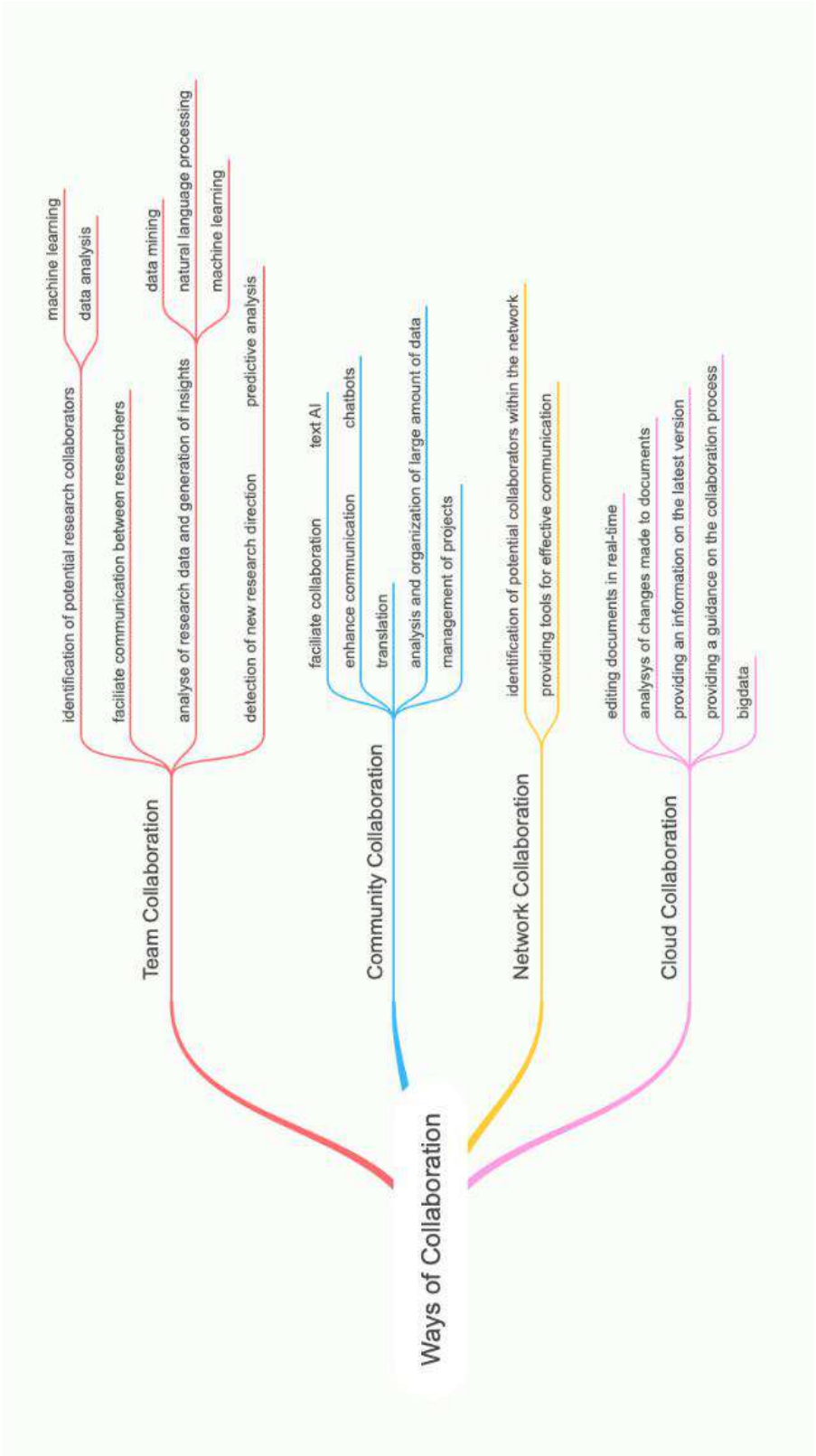

Figure 3 Ways of Collaboration

3.5. TAILOR

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The analysis presented in subsections 3.1-3.4 clearly shows that the four types of collaboration - interpersonal, community, network, and cloud collaboration - can be enhanced through the use of AI. This is particularly relevant to the TAILOR project (TAILOR, brak daty), which aims to build the scientific foundations for trustworthy AI in Europe. The project develops a network of research excellence centres that leverage and combine learning, optimization, and reasoning to create descriptive, predictive, and prescriptive systems that integrate data-driven and knowledge-based approaches. By incorporating AI into the different types of collaboration, researchers from different European university alliances can benefit from more efficient and effective collaboration. For example, AI-powered tools can facilitate communication between researchers, identify potential collaborators within a community or network, and even assist with real-time document editing in cloud collaboration. Furthermore, AI can help improve the accuracy and quality of predictive and prescriptive systems, providing valuable insights for researchers. As such, the TAILOR project can provide a platform for the integration of AI into different types of collaboration to maximize research potential. It is worth noting that some of the EUNICE universities are already partners of the TAILOR project. This presents an opportunity for these universities to not only benefit from the use of AI in collaboration but also contribute to the development of trustworthy AI in Europe. Through their participation in TAILOR, these universities can gain access to cutting-edge AI technologies and collaborate with leading experts in the field to further their research goals. As such, the partnership between EUNICE universities and the TAILOR project can pave the way for more innovative and effective collaboration practices (TAILOR, brak daty).

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4. AI research areas pursued in European university alliances

European university alliances are increasingly turning to artificial intelligence (AI) to drive innovation and research across various fields. In this document, we explored selected inter-European alliances and their fields of interest in context of AI. The table below provides information on several European organizations and their areas of focus in artificial intelligence (AI) research. It includes the names of the organizations and their specific areas of AI research, covering a wide range of topics such as robotics, biosensors, AI-based decision support systems, healthcare, ethics, advanced manufacturing systems, and smart sustainable technologies. This table is helpful for understanding the various areas of AI research in Europe and for identifying potential partners or collaborators in these areas.

Organization	AI research focus
ATHENA	4th Industrial Revolution Topics, Robotics and Sensors, Novel Sensor Principles and Sensor Development, Sensor Information and Signal Processing, Underwater Robotics, BioSensors, Assistive Technologies, Artificial intelligence and decision support systems
Circle U	Legal and ethical aspects of AI, Developing AI skills in humanities and social sciences, Ethical issues in AI, Predictive analysis and AI impact in learning symbolics
E3UDRES2	Multisensory Farm Monitoring ecosystem to predict plant diseases; Human Contribution to AI network focused on VR and AI in active living and active aging, challenges in agriculture, trustworthy data sharing among companies, utility and waste management in smart cities, and prediction of moral behaviour in law enforcement
EELISA	AI4Health community focused on applying AI and soft computing methodologies to healthcare and wellbeing systems; AI4Manufacturing community focused on integrating AI with advanced manufacturing systems to create sustainable competitive advantage; Flight Tests and Experimental Models community focused on unmanned aerial systems for integration in modern cities' advanced technology services; Health in the City community focused on improving hospital processes, creating healthier neighbourhoods, and expanding digital transformation in health; Green Planet community focused on preserving the planet with the help of intelligent technology
ENGAGE.EU	Application of AI in the fields of business, economics, and social sciences to provide European citizens with the skills and competencies to tackle major societal challenges
ENLIGHT	Application of AI in the healthcare industry to improve patient outcomes, develop new treatments and therapies, and enhance operational efficiency in healthcare organizations
Neurotech EU	Application of AI in empirical and clinical neuroscience; theoretical neuroscience; neuromorphic computing; neuromorphic control / neurorobotics; neuroinformatics; neuroprosthetics; clinical neurotechnology; neurometaphysics (neurophilosophy, neurolaw, neuroethics, neuroaesthetics, neurodesign)
RUN-EU	Application of AI in health and wellbeing; smart sustainable and advance manufacturing; IoT; cybersecurity

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Ulysseus	Application od AI in business cooperation and start-up creation; scientific research on new frontiers of AI for societal challenges from a European perspective
EUGLOH	Research in the field of AI and the relationship between humans and machines with a focus on affective computing; development of predictive models for monitoring, diagnosis and decision support in various application contexts; transfer learning methods
EUNICE	A platform for sharing AI related competences of EUNICE universities, enriched with examples of research applications

In addition to the selected European university alliances mentioned above, the table below also includes the main application areas of AI, such as healthcare, manufacturing, and smart cities. These areas are linked to selected European university alliances that are working on AI research and development. By examining these alliances, researchers and businesses can identify potential partners and collaborators in their specific areas of interest.

AI research focus	Organization
Robotics and Sensors, BioSensors	ATHENA
Signal processing	ATHENA
Decision supporting	ATHENA, Circle U, EUGLOH
Legal and ethical aspects	Circle U, E3UDRES2, EELISA, Neurotech EU
Social sciences	ENGAGE.EU, Ulysseus
Healthcare	EELISA, ENLIGHT, Neurotech EU, RUN-EU, EUGLOH
Wellbeing	E3UDRES2, RUN-EU
Data sharing	E3UDRES2
Business and economics	E3UDRES2, ENGAGE.EU, Ulysseus
IoT	E3UDRES2, RUN-EU
Cybersecurity	RUN-EU

5. The milestones of the action plan

The development of a web portal that utilizes AI to aid users in finding partners for specific AI needs and provides a search engine for partners to interact with the outputs of research article analyses and user profiles is the main objective of the action plan. The following three milestones were defined in order to achieve this goal:

1. Conducting a text analysis of research articles related to AI from various universities using NLP libraries to identify different themes. Ensuring that free and easy access to the different repositories where the articles, or at least their titles and abstracts, are stored. The identification of strengths in different domains of AI will be possible as a result of this.
2. Enhancing the classification to identify searchers, professors, and their specific domains in the AI field utilizing NLP library in a distributed manner

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(inside agents), and allowing identified searchers and teachers to update and modify their profiles on the portal. This will aid in team collaboration and user search.

3. Creating a search engine on the portal that allows partners to interact with the outputs of the text analysis and user profiles utilizing Large Language Model library (LLM) with "gpt"-like behaviour. Adding functionality to declare groups of users around a thematic, a project and utilizing AI to follow the dynamics of the groups and measure the 'dynamic' of AI sub-domains.

The following are the tasks necessary to achieve each milestone:

Milestone 1:

Objective: To use text AI to analyse research articles related to AI from different universities and identify various themes.

Tasks:

• Identify and gain access to the different repositories where research articles related to AI are stored.

• Utilize NLP library to analyse the articles and identify various themes.

• Compile a list of strengths in different domains of AI based on the identified themes.

• Use the identified strengths to create a web portal "cartography" to assist users in finding partners according to specific AI needs.

Milestone 2:

Objective: To refine the classification to identify the searchers, professors, and their specific domains in the AI field.

Tasks:

• Enhance the classification of research articles using NLP library in a distributed manner to identify searchers and professors in the AI field.

• Add a portal feature that allows each identified searcher or teacher to update or modify their profile.

Milestone 3:

Objective: To define a search engine that allows partners to interact with the outputs of the previous milestones.

Tasks:

• Develop a search engine utilizing LLM library that mimics a "GPT"-like behaviour.

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• Add a portal feature that allows users to declare groups around a thematic or project.

• Utilize AI to follow the dynamics of the groups and measure the "dynamic" of AI sub-domains.

It is essential to bear in mind that these milestones can be developed concurrently if sufficient human resources are available. Additionally, it is recommended to first test and develop milestone 2 locally with data from one university before linking it to the results of milestone 1. Similarly, it is advisable to define and develop an enhanced search engine based on natural language independently before fusing it with the previous milestones in a global prototype.

The action plan set forth above ought to be carried out by March 31st, 2024.

6. Collaboration

The primary objective of the action plan is to establish a website that utilizes AI to assist individual researchers in finding compatible partners for their specific interests within the AI domain. The platform will include an open search engine, not only reserved for EUNICE partners, that will enable other European university alliances to access research article analysis findings and user profiles. To encourage and facilitate the exchange of information on ongoing research and interests in AI among the European university alliances, promotional activities will be organized at international conferences that bring together researchers from various research centres. Additionally, AI-related blogs (e.g. blog at PUT website – on research in the field of artificial intelligence using the AI Training Super Server Super Micro with Habana Gaudi Deep Learning Processors in cooperation with Intel Co.) and other communication media channels (Both EUNICE and partner universities' blogs, news on the websites, social media, newsletters) will be utilized to support these endeavours To involve other Alliances the action plan will be cmmunicated at the Forum of European University 2 (FOREU2) Digital services and data sharing subgroup chair. FOREU2 brings together 25 European university alliances (ATHENA, AURORA Alliance, Circle U, E3UDRES2, EC2U, EELISA, ENGAGE.EU, ENHANCE, ENLIGHT, ERUA, EUNICE, EUNIWell, EURECA-PRO, EuroTeQ, Eut, FILMEU, INVEST, NeurotechEU, RUN-EU, T4E, ULYSSEUS, UNIC, UNITA, UNIVERSEH). The purpose of the Forum is to facilitate collaborative efforts among these alliances' SwafS (Science with and for Society) projects, which will allow the EUNICE alliance to work together, promote their prepared solutions, and share knowledge and experiences to foster collaboration in the field of AI.

The promotional activities for the proposed solution began with its presentation at the GHOST Day conference (Applied Machine Learning Conference), which aims to foster collaboration between universities, promote open science, and encourage cooperation with the industry. The conference, which gathered scientists from different focused on collaboration, sharing, and disseminating information about the proposed AI solution.

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The next crucial step in our promotional campaign involves the upcoming CyberFit conference (2023), organized by the University of Maribor, with whom EUNICE Alliance has enjoyed a longstanding collaborative relationship as our trusted Associated Partner. As a member of the ATHENA alliance, the University of Maribor plays a vital role in shaping our shared goals. Over the years, EUNICE Alliance has worked closely with the university on various successful ventures, including consultations and joint efforts in promoting the web portal currently under development. This conference provides an excellent opportunity to disseminate information and foster collaboration in further advancing and optimizing our solution.

Promotional activities for the proposed solution will continue during the 17th ConTEL - International Conference on Telecommunications (July 2023), hosted by Graz University of Technology, a member of the Unite! University (one of the European Universities).

Aside from these initiatives, we are preparing an email campaign that highlights the ongoing development of our solution, along with a questionnaire focusing on its functionality, strengths, and weaknesses. This informative bulletin and survey will be distributed to all member universities within the European university alliances, serving the dual purpose of disseminating vital information about our web portal and eliciting valuable insights for potential optimization strategies.

7. Conclusions

In conclusion, this document serves as a blueprint for an action plan for research in AI, which aims to bring together European university alliances to collaborate and cooperate on innovative applications of AI in various fields. The plan emphasizes the importance of collaboration across teams, communities, networks, and clouds, utilizing AI techniques to facilitate the acquisition of knowledge and expertise from partners. By fostering cooperation and collaboration between EUNICE and other European university alliances, this action plan seeks to leverage the power of AI to tackle complex challenges in a more integrated and holistic manner. Ultimately, this collaborative effort will enable European universities to stay at the forefront of AI research and development, promoting sustainable and innovative solutions that benefit society as a whole.

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