Contents list available at https://journal.uib.ac.id/

|JOINT

(Journal of Information System and Technology)

journal homepage: https://journal.uib.ac.id/index.php/joint/

The Idea of Implementing AI into the Learning Management System

Jimmy Prawira Samudra[1], Wisely Liang[2], Afandi[3]
System Information, Universitas Internasional Batam
Email : dragonozwizard@gmail.com[1], Wisely290@gmail.com[2], afandiwu22@gmail.com[3]

Abstract

This academic research paper is intend to propose our team ideas into upcoming future society named society 5.0. We will be researching in how Artificial Intelligence (AI) can provide its technologies capabilities into Learning Management System (LMS). LMS has been an interest in the past few decades and has helped educators a lot in imparting knowledge to their students. So, we can see that LMS will be used a lot in the not so far away future. From this paper, we hope that our idea can be a potential researching material for the researchers.

Keywords: society 5.0, learning management systems, artificial intelligence

I. INTRODUCTION

The computer has been an important part of modern education. And because of that, there is nothing wrong with using the capability of modern computing technology in education, with the creation of Learning Management System which is a software platform utilized for education purpose, highly provided by information systems. In our modern times, the evolution of digital technologies is rapidly fast paced, such as internet of things, robotics and one of our paper main topic, artificial intelligence (AI) (Fukuyama 2018). Even though now we have entered society 4.0, in the country of samurai, Japan has presented the concept of future called society 5.0 which is the upgrade version and the better of society 4.0, by making use of Internet of Things (IoT), Virtual Reality or Augmented Reality and Artificial Intelligence with hope for improving today mankind society (Nastiti and Abdu 2020). So, in hope of support the realization of society 5.0, our team has devise an idea, as you can see from the title is to

implementing AI into learning Management System. Today most of education place has started using IT technologies to improving their qualities of Learnings. But, does facilities of normal LMS truly enough to meet the upcoming future? With how the rapid change of information and complex environment, also require a more quick response and solution. And to obtain such system, require a self-adaptive system. Yes, we mean artificial intelligence (AI) (Yager et al. 2016).

The First Artificial Intelligence Program were developed by Allen Newell and Herbert A. Simon in 1955 in form of tree structure with a lots of branch (children) to problem solving and reach the truest fact. The program those two created were become a huge influence for the future development of AI. As today technology has become more sophisticated, AI processing speed has become more powerful than human. in medical world, the role of AI has the capability to predicted chemistry and planning syntactical component out of small particle (Struble et al. 2020). We can be sure from that fact, AI has indeed become an incredible invention and play an important role for the improvement of future technologies.

II. LITERATURE REVIEW

The use of artificial intelligence in Education aren't really that uncommon. Many researcher has been using artificial intelligence in the past decades. Here are some research we have conducted as references and support to our paper:

1. A journal titled "*Penerapan* Artificial Intelligence *dalam* Computer Aided Instructure (CAI)" (Halim and Prasetyo 2018) discussing about implementing AI into CAI. According to this journal, CAI is the using of computers that simulate and act as a teacher by using multimedia feature instead of teachers and student straight up or face to face conversation. In here it said

about some traditional CAI weak points in facing today technologies challenges like:

a. The lack of computer interaction between human, created an ineffectiveness to the system.
b. The lack of communication between learner and teacher, lowering the positive effect that it has.
c. The lack of cleverness system, making the system unable to facing several situation effectively.

So, to deal with such weakness, they planned to implemented artificial Intelligence to CAI, turning it into Intelligent Computer Aided Instruction (ICAI).

2. A journal titled "*Implementasi* Artificial Intelligence *dalam Memetakan Karakteristik Kompetensi dan Perkembangan Psikologi Siswa Sekolah Dasar Melalui* Platform Offline" (Pratikno 2018). It's about researching the used of artificial intelligence in education, especially for understanding Indonesian elemental school student characteristic, competence and psychological development, that way we have fully grasp of elementary student behavior. So, teacher can came up with some strategy, method or any kind of learning media. Its implementation is done on offline platform because the network condition in Indonesia is poor. The result of it is to hope the using of AI will expand into all elementary school in Indonesia.

3. A journal titled "*Pendidikan di Era Revolusi Industri 5.0*" (Arjunaita 2020) explaining education in industry revolution 5.0. It is say that the change of era cannot avoid by any person so we need human resource to adapt and able to compete with such future. The success of how a country facing industrial revolution 5.0 determined by how skilled the teacher, the ability to adapt with the new technologies and global challenges. Because in order to facing industrial revolution 5.0 need a good education that can shape new

generation into creative, innovative and competitive character by utilized modern technology like IoT, virtual reality, augmented reality and artificial intelligence, such is what they called education 5.0.

III. METHODOLOGY

A. Idea

How do we implementing an Artificial Intelligence into Learning Management System? With that question the idea we thought of is using a chatter bot. Chatter bot by definition is a computer system design to simulated conversation with human. They are 2 kind of chatter bot, (1) chatter bot that created based on only rules, only limited to the rules it was given to (2) chatter bot that created with AI on it, capable of understanding human language and can learn by itself to be a better bot (Kar and Haldar 2016). We will be using the one with artificial intelligence here. We can install chatter bot as an assistant in LMS. According to (Colace et al. 2018) research, the used of chatter bot for E-Learning is very popular for complicated application nowadays. Because of that, in many cases, chatbot has been able to comprehend users question and provide the correct answers, giving a hand for assistance services.
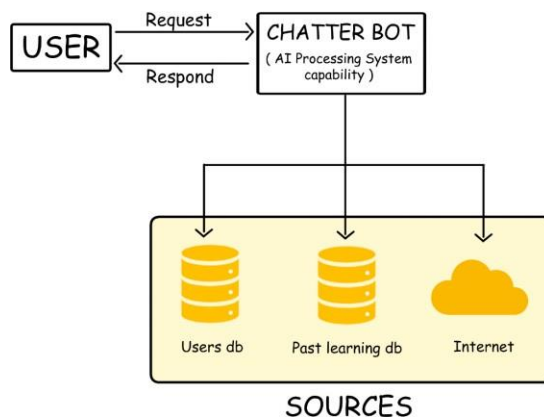

Figure 1. Chatter Bot System in E-Learning

As shown in figure 1, here is how chatterbot work in E-learning environment:

1. User send request to chatterbot.
2. Chatterbot with AI processing power will be able to simulate human behavior way of thinking.
3. By using sources like:
   a. Users db: database full of user information.
   b. Past learning db: database full of chatterbot past learning experience.
   c. Internet: place like website or any accessible place.

   It will read, think and analyzed to reach to the correct answer for user request.
4. After chatterbot successfully found the answer, it will respond it to the user.

Although many has also try to implementing AI/chatter bot in education systems, here are some feature we concluded that an AI have to help the users:

1. AI will be able to recommend websites, journals, materials provide by teacher and any educational source from internet as research or references based on user history that AI studies and analyzed.
2. AI will try to help organize the schedule based on the number of user school/college subjects and users' external activities. Of course users will have to told AI its own external activities by manually inputing the data to AI, all for privacy reason. Here, AI only help generated schedules, depending on whether the user wants to use it or not.
3. Althought its difficult to execute it, AI will provide suggestions and techniques to improve the grades of users who are considered by AI to be under achieving. For example: bad at math in the Huffman code section, AI will provide any suggestions and schedule for the users to learn the lesson.

While in figure 1 didn't explain it, AI in this system can do all 3 above themselves without any instruction from users, giving the system

more flexible that way.

B. Business View

If we talking about personal assisstant, surely most of the people have recognize Siri and Google assisstant the most as those personal assisstant come with smartphone device. So, here are some of our thought, instead of creating a whole new intelligence assisstant why not the company itself developing and expand each intelligence assisstant itself to become E-learning personal assistant potential? Especially for Google, Apple, Microsoft, IBM and any other IT companies. Such will be a new business value if successfully developing it. Many education place will taken interest to spend some cash and installing it into E- learning system since its came from already well-known and reputable company.

C. The Used of Internet of Things (IoT) with AI in Education

Internet of things, first describe by British visionary, Kevin Ashton in 1999 is a future concept of using internet not only limited to computers, but any technologies that have the possibility of internet connection. Be it television,smartphone, fridge, traffic light or any kind of it all connected to make better and smarter organizations, security, control and personal life. Internet of things is also one of the technologies that will exist in society 5.0 of course with every device and technologies connectedin internet, huge number of data is to be expected. Because of that, with the help of AI algorithm analysist and technique capability, it's can help IoT analyzed and organized data making AI important to IoT (Mohamed 2020). In ourimplementation AI into LMS ideas from above, AI need internet for better source of data and knowledge so it can provide better service. Try to imagine, if a chatbotmange to connected into classroom, laboratory, library or any

school/campus facility. All the connected data then being proccessed into LMS. With that amount of information, the AI itself too will become much better at knowing you. Giving much better services to its user.

IV. CONCLUSION

The introduced of society 5.0 has making many researcher pursuing new technology and knowledge in hope ofpreparing for the future. It is not so different either in the world of education.With every reseaching we have done, we then come up with the implementation of Artificial Intelligence into learning management system. Using chatter bot as artificial intelligence and personal assistant, it is hope for educationalexperience to be smarter and better. Preparing for the change of the world.

V. REFERENCES

Arjunaita. 2020. "Pendidikan Di Era Revolusi Indiustri 5.0." *Prosiding Seminar Nasional Pendidikan Program Pascasarjana Universitas PGRI Palembang* 2:179–96.

Colace, Francesco, Massimo De Santo, Marco Lombardi, Francesco Pascale, Antonio Pietrosanto, and Saverio Lemma. 2018. "Chatbot for E- Learning: A Case of Study." *International Journal of Mechanical Engineering and Robotics Research* 7(5):528–33. doi: 10.18178/ijmerr.7.5.528-533.

Fukuyama, Mayumi. 2018. "Society 5.0: Aiming for a New Human-Centered Society." *Japan SPOTLIGHT* 27(August):47–50.

Halim, Chanda, and Hendri Prasetyo. 2018.

"Penerapan Artificial Intelligence Dalam Computer Aided Instructure(CAI)." 01(01):45–51.

Kar, Rohan, and Rishin Haldar. 2016. "Applying Chatbots to the Internet of Things: Opportunities and Architectural Elements." *International Journal of Advanced Computer Science and Applications* 7(11). doi: 10.14569/ijacsa.2016.071119.

Mohamed, Esraa. 2020. "The Relation of Artificial Intelligence with Internet ofThings : A Survey." *International Journal of Advanced Trends in Computer Science and Engineering* 1(1):30–34. doi: 10.30534/ijatcse/2019/27862019.

Nastiti, Faulinda, and Aghni Abdu. 2020. "Kesiapan Pendidikan Indonesia Menghadapi Era Society 5.0." *Edcomtech Jurnal Kajian Teknologi Pendidikan* 5(1):61–66. doi: 10.17977/um039v5i12020p061.

Pratikno, Ahmad Sudi. 2018. "ImplementasiArtificial Intelligence Dalam Memetakan Karakteristik, Kompetensi, Dan Perkembangan Psikologi Siswa Sekolah Dasar Melalui Platform Offline Conference." *Isbn* (September 2017):18–27.

Struble, Thomas J., Juan C. Alvarez, Scott P. Brown, Milan Chytil, Justin Cisar, Renee L. Desjarlais, Ola Engkvist, Scott A. Frank, Daniel R. Greve, Daniel J. Griffin, Xinjun Hou, Jeffrey W. Johannes, Constantine Kreatsoulas, Brian Lahue, Miriam Mathea, Georg Mogk, Christos A. Nicolaou, Andrew D. Palmer, Daniel J. Price, Richard I. Robinson, Sebastian Salentin, Li Xing, Tommi Jaakkola, William H. Green, Regina Barzilay, Connor W. Coley, and Klavs F. Jensen. 2020. "Current and Future Roles of Artificial Intelligence in Medicinal Chemistry Synthesis." *Journal of Medicinal Chemistry* 63(16):8667–82. doi: 10.1021/acs.jmedchem.9b02120.

Yager, Ronald, Vassil Sgurev, Mincho Hadjiski, and Vladimir Jotsov. 2016. "2016 IEEE 8 Th International Conference on Intelligent Systems." *Artificial Intelligence Technologies for Personnel Learning Management Systems*.

(Jimmy Prawira Samudra1, Wisely Liang2, Afandi3)