

Use of Artificial Intelligence in Education and Recruitment with its Challenges

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Abstract: In the education industry, Artificial Intelligence has brought revolution by changing the way of learning. Learning has become more personalized and convenient for learners. Artificial intelligence is expected to make an innovative impact on education by different personalised applications. Each individual student will get increased amount of time for learning with AI agent. Artificial intelligence can change way to learn by learners and the recruitment process. Artificial intelligence can automate the learning and recruitment process so that the outcome will be more specific, accurate and faster. Impact of artificial intelligence on learners, institute and recruiters are analysed in this paper. This research will study the changes in teaching, education institutes and recruitments caused by AI. The challenges of artificial intelligence for education and recruitments are explored in this paper. Insightful information for learners, institutes and recruiters with detailed knowledge for academic system building will be provided by this study.

Key Words: Artificial intelligence, AI agent, Education institutes, Recruitment, Personalised applications

1. INTRODUCTION

Artificial intelligence plays an important role in education industry. It proves helpful for Education institutes, students, teachers as well as assist in campus recruitment. Artificial Intelligence enables machines to collect, store, sort, manage and analyse data received from various sources. This data can be utilized for multiple purposes from providing solutions to frequency asked questions to creating tutorials for students as per their needs. Education institutes are always in need of a strong data analysis and predictive analysis tool to assist them in various academics and administrative activities. Artificial intelligence has fill in this gap to a large extent. On the other side, students' faces issues in accessing required curriculum and notes to complete their study. Artificial intelligence enables various platforms to student for easy accessibility of curriculum and study material. It gives them ease and comfort to access required study material and also help them to complete study at their own pace. Artificial intelligence has changed the way education system is working with regards to teachers as well as students.

2. LITERATURE REVIEW

Wilton W.T. Fok et. al. (2018) presents a model based on Deep learning and developed using tensorflow engine. This model classifies students to predict their degree program by analysing their academic as well as non-academic parameters. Association rules and Decision tree techniques were prominently used for prediction. Data of 2000 students were used in this model and the accuracy level was in between 80% to 91%.

Anbukarasi V and A. John Martin (2019), have applied nine machine learning procedures on the dataset using Weka tool. Data was collected from 1100 students to build and test this model. The paper provided a conclusion that J48, RF, Bayesian Network and REPTree algorithms gives best accuracy as compared to remaining one.

Navyashree S L et. al. (2019), presented a comparative study of multiple machine learning techniques for placement prediction. Secondary data from a placement cell was used for this study. After studying various types of supervised, unsupervised, reinforcement machine learning techniques, authors presented a conclusion that SVM and Bayesian Belief Network was the best algorithm for placement prediction.

Mehdi Mohammadi et. al. (2019), used KNN, Decision Tree and Naïve Bayes data mining algorithms for predicting students' performance. Decision tree, KNN and Naïve Bayes learning procedures were applied on the dataset. KNN showed 0.5464% accuracy. Decision tree gave 0.5325% accuracy. Naïve Bayes algorithm gained 0.4616% accuracy score. The author concludes that KNN algorithm has best accuracy as compared to other two algorithms for predicting GPA of students.

Mohana Bangale et. al. (2019) describes placement prediction system built using machine learning techniques. KNN, SVM and Naive Bayes algorithms were used in this system for predicting student performance. Authors have used ensemble methods in this system to take average of multiple algorithm outputs. This paper concludes ensemble methods used in the model can bring in more accuracy compared to other algorithms.

Deepti Aggarwal et. al. (2019) has studied many machine learning techniques. Classification and regression were the two predictive modelling techniques used in this model to predict class and number. A Number of research papers related to predictive analysis were examined in this paper along with techniques for predictive modelling.

Jeromie Reggie Ebenezer et. al. (2019) studies decision tree algorithm for predicting educational performance of students. Attendance and subject scores are considered to predict performance. ID3 technique from decision tree methods was utilized on the dataset. This paper concluded that score of specific subject can also affect performance of related other subjects.

Pothuganti Manvitha, Neelam Swaroopa (2019) presents a model for campus placement using supervised machine learning algorithms. The paper aimed at building a model to predict placement probability of existing students by analysing historic data of past students from placement drives. The paper concluded that Random Forest gave accuracy of 86% and for decision tree 84%. Random Forest algorithm was concluded as best for placement prediction.

Slamet Wiyono, Taufiq Abidin (2019), describes three machine learning techniques for predicting student performance. Random forest, SVM and KNN algorithms were implemented in this model on data gathered for 1530 student with 7 attributes as a dataset. The comparison of these algorithms showed SVM with C value as 1 with highest accuracy as 95%. KNN gave best output with k value as 5.

3. ARTIFICIAL INTELLIGENCE FOR LEARNERS

Artificial Intelligence applications can give customized training and direction to students which will support students and teachers to upgrade their knowledge. Teacherbots are machine-based artificial intelligence application which store, organize information in a systematic way to provide quick answers to predictable questions as it is used by an assistant within online learning page.

3.1 Personalized learning

It is observed that same set of study plan cannot work for all students as their grasping capacity and study pace defers. Artificial Intelligence applications can prepare personalized learning plan depends on each student characteristics. Educational programs can be customised based on student needs and intelligence level. It can be changed as per their interest and learning capability.

3.2 Adaptive Learning

In Adaptive learning Artificial Intelligence strategies helps institutes to monitor progress of their students to ensure every student is on track to complete syllabus with satisfactory level. The systems assist teachers to identify weak areas of students and accordingly modify the study plan to focus on specific topics.

3.3 Proctoring

In this changing scenario online tests are most common but institutes mainly face an issue in validating authenticity of the student. It is very significant for the institute to verify student has not performed any unwanted actions while giving tests. Artificial Intelligence tools can monitor the actions performed by the students and captures all activities to confirm, student has given test without any online help.

3.4 Data Accumulation and Personalization

Artificial Intelligence can help to collect and maintain systematic records of data related to searches by students. It can analyse the searches to predicts the questions and accordingly provide relevant information quickly.

4. ARTIFICIAL INTELLIGENCE FOR INSTITUTES

Artificial Intelligence helps institute in streamlining and automating many functions. It helps institutes to create customise profiles for every student by capturing their intelligence and competencies. This further can help to design tailor-made solutions and study plan for each student.

4.1 Automation of Administrative Tasks

Administrative tasks most important as well as time consuming for every institute but Artificial Intelligence tool can organize and automate many of the routine tasks. This can significantly improve the efficiency as well as accuracy in

maintaining correct data. These automations can surely reduce load on the institute office and free their time for more value add activities.

4.2 Digital Curriculum

Digital textbooks and notes are most convenient and user-friendly in current scenario. Apart from durability and storage facility, it also serves purpose of distance learning. Artificial Intelligence helps institutes to create digital curriculum along with notes and tests. It has a capability of designing the curriculum based on student needs. Cram101 framework produces computerized content with the assistance of section outlines, cheat sheets, and practice tests. Netex Learning framework permits teachers to layout a computerized educational program with audio-visuals alongside an online aide.

4.3 Smart coaching frameworks

As per current framework students are restricted to communicate and clear their doubts with teacher in lecture time or maximum to the college hours. Artificial Intelligence tools can help institute gather a database and create smart coaching system which will be available all time for student. This will remove time constrain and ensure real time solutions are provided to students.

4.4 Virtual Learning

Virtual learning is a latest trend in education sector. It has proven efficient as well as cost beneficial for both institutes as well as students. Reusability is a main advantage of virtual learning as the lectures created and recorded can be reused multiple times as when needed. Connectivity between learner and mentor improves a lot in virtual learning as it can be access from anywhere and anytime as per learner's need.

4.5 Automated Grading

Periodic tests are integral part of every educational curriculum. Teachers have to spend lot of time to construct this test and ensure students papers are checked quickly to provide constructive feedback. Artificial Intelligence not only helps to create test but also runs automatic process to check student papers and give grades. It also goes further to analyse the result to identify sections where student has to take more efforts to come up to the curve.

5. ARTIFICIAL INTELLIGENCE FOR RECRUITERS

Artificial Intelligence is widely used by recruiters for initial screening of candidates and scan through database to find possible matches to their requirements. It is huge manual task to search for right profile matching open positions. Artificial Intelligence helps to identify right skilled people matching recruiters demand.

5.1 Resume parsing

In resume parsing tools, all resumes are converted into a common profile to list down experience and skills mentioned in the resume. This helps recruiters to perform initial scanning and screening to eliminate profiles not matching with requirements. Also the data is stored in a standard format for future reference.

5.2 Automated Messaging System

Recruiters always follow a good communication flow to ensure candidates are aware of their application status. Artificial Intelligence tools enables them to schedule interviews and send calendar invites to candidates informing date, time, venue and other details for the interview. It further sends automated messages to inform progress of the application to candidates.

5.3 Automated Candidate Sourcing

Artificial intelligence has improved the recruitment systems and helps them to automate candidate sourcing procedure and broaden their range. It can scan through around 300 million social profiles in short time. It also sends customized messages to matching candidates in the waiting to keep them engaged with the recruiters.

5.4 Candidate Rediscovery

Artificial Intelligence can create a huge database of resources and enable recruiters to scan through available database for finding best matches. This feature helps recruiters to rediscover some profiles which were not considered earlier but can considered now for current open position with them.

5.5 Internal Employee Referral Program

Artificial Intelligence helps organization to reach out to their own employees for referring their friends or relatives. It also stores the details of profiles shared by employees and accordingly picks the best match as per current requirement.

6. CHALLENGES

Artificial Intelligence is a most advance techniques to handle huge data and builds predictive analysis. Though, this is advanced but it still has few challenges to consider.

1. All issues do not fit in standard process: Artificial Intelligence studies data provided as input and predict results by analysing that historic data. This solution can change case by case basis and one solution will not fit to other common issue.
2. Supervision is must: Artificial Intelligence doesn't run by itself. The master should control and implement correct rules to get expected output.
3. Lack human experience: As this is a completely machine based model, experience based human evolution is not possible. The system works as per data provided and gives output with applied rules and algorithms.
4. Automation demerits: Artificial Intelligence can automate many usual daily recurring tasks and reducing workload significantly. This may adversely affect employment of the staff and administrative resources.
5. Cost Factor: It is agreed that use of Artificial Intelligence can reduce workload and bring in more efficiency but this comes with a hefty cost of implementation as well as maintenance of the system.
6. Huge Data Requirement: Artificial Intelligence purely works on data. It doesn't produce or fetch data automatically. As the output is data driven, huge data is required as input to cover all possible scenarios to arrive at conclusion.

7. FUTURE SCOPE

Artificial Intelligence surely has a wide scope to further explore possibilities to enhance prediction results. Various combinations of machine learning techniques can be studied with given data to arrive at closest possible prediction. Continuous improvement model can be built which will evolve as per data feed and new results. There is a huge scope on further research for connecting learners, institutes and recruitment all together to predict learner's career pathway with Artificial Intelligence.

8. CONCLUSION

This paper presents vital points regarding usage of Artificial Intelligence in education industry. Various advantages and uses were discussed in this paper related to implementation of Artificial Intelligence in predictive model. Many past papers were studied to derive important features of Artificial Intelligence and how the same is used by different researchers. The paper systematically presents benefits of Artificial Intelligence to each segment of academic institutions, teachers and students. It presents benefits for all the people involved in education sector. The paper further list down challenges of using Artificial Intelligence and describes further scope of research. As a conclusion, this paper presents benefits of Artificial Intelligence, keeping in sight the challenges and limitations.

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