(Biotechnology | Robotics | Artificial Intelligence | Nanotechnology | Space | Strategic Services)   BRAINS² TÜRKİYE

ARTIFICIAL INTELLIGENCE PROGRAM
APPLICATION PROJECT - I
ARTIFICIAL INTELLIGENCE IN EDUCATION
STRATEGIC TRANSFORMATION AND ECOSYSTEM

Artificial Intelligence in Education Workshop - 5
FINAL REPORT

"Artificial Intelligence in Distance Education" titled **Artificial Intelligence in Education Workshop - 5** was held by the Education, Industry and Technology Institute (ESTEN) on **April 25, 2019** at KWORKS - Koç University Entrepreneurship Research Center in **İstanbul**.

In the moderation of Dr. Sevinç TUNALI and related presentation was made by Yalçın ÖZKAN, the workshop was held with the aim of to examine the usage examples of artificial intelligence in the field of distance education and to evaluate the data that can be collected through distance education. In the last part of workshop, suggestions and projections on artificial intelligence applications in distance education were discussed.

Face to face education is done in schools. In distance education, it is done on platforms named "Learning Management System". This platform, meets all the needs of educational institutions like a school. Although distance education has a field of use in all levels of education, the discussions in the Workshop focused on higher education in particular. According to Council of Higher Education (YÖK), distance education defines as; in higher education institutions, teaching activities are planned and carried out based on information and communication technologies and the education in which the courses are given simultaneously by the instructor without being obliged to be in the same place, based on the interaction between the student and the instructor and the students.

With the help of lesson plans in distance education, it is determined when live classes will be held. Thereby, students take part in the virtual classroom within the specified time. In the face-to-face (traditional) education, the environments that enable the academic activities performed in the classrooms to be interacted visually and audibly over the internet are called "virtual classrooms". In the virtual classrooms;

1)   The instructor gives his/her lectures visually and audibly in front of the camera.

2)   The instructor gives his/her lecture by using the presentation tool and adhering to the course notes that pre-prepared.

(Biotechnology I Robotics I Artificial Intelligence I Nanotechnology I Space I Strategic Services)

BRAINS² TÜRKİYE

ARTIFICIAL INTELLIGENCE PROGRAM
APPLICATION PROJECT - I

ARTIFICIAL INTELLIGENCE IN EDUCATION
STRATEGIC TRANSFORMATION AND ECOSYSTEM

3) In this system, if the instructor wishes, he/she uses the "whiteboard", which is similar to the "blackboard" used in schools. At the same time, the students watch the writing and figures on the blackboard.

4) Students can ask questions during the lecture. The instructor can answer this question in written or verbal form at the time, as other students will hear and see.

5) The course of the instructor is recorded to the archive in video format. The student can watch this video at any time to understand the subject better.

Artificial intelligence classification models are frequently used in data mining and are used to reveal hidden patterns in databases. A certain process is followed to classify the data. Firstly, an artificial intelligence model is obtained by using part of the existing data set for educational purposes. The performance of the models is determined using the data allocated for testing. Then, with the help of these models, it is determined that how to decide when a new situation arises. In addition, the factors that are effective in the model are taken into consideration and focusing on these factors is provides.

Collecting data is easier in the virtual environment than in the traditional classroom environment due to the fact that topics such as data production, data recording and data processing can be done more easily and quickly. In the classrooms where the traditional education done, it is quite difficult to determine interest and attention span, tracking of busyness about the lecture and teacher's pedagogical maneuvers. In the virtual classroom environment; recording every movement of the student, time spent on a page, response speed and even eye tracking makes it possible to use all of them as data. It is possible to use the data obtained from all behaviors by modeling the variables such as performance evaluation, detection of undesirable behaviors, and developing individual propositions.

Artificial intelligence in distance education can be used to evaluate the results of activities. By this means, it helps educators about which factors are effective on success and which factors should be focused on. This can produce results about what to do and what not to do. Apart from these, it also guides educators in developing predictions and on "Personalized Learning".

EĞİTİM, SANAYİ ve TEKNOLOJİ ENSTİTÜSÜ
EDUCATION, INDUSTRY and TECHNOLOGY INSTITUTE

TASAM BGC
Business and Government Consultancy
İş ve Devlet Danışmanlığı

TASAMWORLD
AKADEMİ VE İNOVASYON GRUBU
ACADEMY AND INNOVATION GROUP

Since distance education uses advanced information technology (IT) infrastructures, it has significant advantages over face-to-face education in data collection and processing. Particularly, machine learning models can be used in the analyzes to interpreting the behaviors that has not yet emerged from the data obtained from the student (C50, Boosted C5, Regression Trees, Support Vector Machine, Logistic Regression, "Random Forest" Deep Learning, etc.). For instance, the demographic characteristics of the student at the time he/she started school and the use of his/her current success to predict future success are among the most frequently carried out studies.

As a different example, as a result of the analyzes conducted on the courses chosen in distance education, it can be predicted how many students will enroll for which course in the next semester. For these analyzes, there are methods of machine learning which analyzes the relationships between the records in the database and tries to reveal which events can occur together simultaneously. "Association Rules" are obtained by identifying these relations.

In order to develop artificial intelligence applications in distance education, it must be fed with continuous data. For that purpose, it is required to record the perspectives and process evaluations of students and faculty members on the learning management system (LMS) periodically. The system can be directed the users to make evaluations during the education process. These evaluations will be processing by the system during the semester and it will be published real time alerts about the system.

Consequently, the data collected during the distance education process and some of the suggestions for artificial intelligence application are listed below.

1)   Combining all the questionnaires conducted to the students and using them in the student's performance analysis, so determining the relationship between student perception and success in a subject.

2)   Developing a system that produces results on a related topic (for example, "people who be in the opinion of A and B, what are they thinking of other topics") by using questionnaires.

3)   Course contents, participation in live classes, interaction with faculty members, monitoring of their behavior in live classes and forums and revealing the activity-performance

(Biotechnology | Robotics | Artificial Intelligence | Nanotechnology | Space | Strategic Services)   BRAINS² TÜRKİYE

ARTIFICIAL INTELLIGENCE PROGRAM
APPLICATION PROJECT - I
ARTIFICIAL INTELLIGENCE IN EDUCATION
STRATEGIC TRANSFORMATION AND ECOSYSTEM

relationship based on such data and thus developing recommendations for personalized learning.

4) Determining the behavioral model of the students tracking the course contents and live course recordings, thereby developing suggestions by revealing the issues that are hard to understand.

5) Developing a system that can offer suggestions by taking into account the activities that caused students' failure.

6) Developing a suggestion system that can guide students in course selection.

Presentation
Dr. Yalçın Özkan

Moderation and Reporter
Dr. Sevinç TUNALI, ESTEN Director