

Engaging students through the stereo of smart voice assistants

Todericiu-Ioana Alexandra

Faculty of Mathematics and Computer Science, “Babes-Bolyai” University

Todericiu.ioana.alexandra@gmail.com

Abstract

As the current generation of students is facing never-before seen challenges in their academic environments, one might ask how can universities keep their high-standards of knowledge-sharing, having curious and engaged students.

In order to adapt to these time, Alexa for Uni skill comes as a smart solution for this current situation, based on cloud-computing services and smart speakers, which aims to address the e-learning environments circumstances, becoming a friendly companion to the user, fun and easy to operate.

Keywords: E-learning environments, Smart Speakers, Cloud Computing

Domain: Computer Science

Section: New (2020) thesis proposals

Motivation

The year of 2020 changed the way in which the world used to be, and in order to have a transition as smooth as possible, technology stepped in and contributed to the shift.

A relevant example would be the academic environment, which embraced the virtual classes and online assessments, as well as other e-learning tools that facilitate the knowledge-sharing experience.

As a response to the current situation, we propose a solution for teachers and students, which enables both groups to achieve more, be proactive and efficient in the same time. Having in mind the accessibility factor, which is considered to be difficult to achieve for website applications from a development point of view, Alexa for Uni skill promises to make the academic environments easier to access, fun and customisable for all, while being a friendly companion for its owner.

Methodology of Research

Alexa for Uni is a feature built for Alexa smart speaker[1], which works as a question-answer system. The user can ask Alexa in natural language questions such as what classes he has on a specific day, when a certain teacher has classes, and a set of a lot more questions, based on the classes schedule of the students and teachers.

Further more, the skill is integrated with Microsoft services, such as MS Teams and Outlook, used by a considerable number of universities. Alexa for Uni is able to post messages on the channel and team specified by the user, read conversations, read emails and sent emails as well. It access the Outlook calendar, and can set up meetings as well.

In order to access this functionality, all is required is a small device with Alexa integrated on it, and an initial setup of connection between the user’s account on Microsoft and Alexa skill.

During the development phase of the prototype, Amazon Web Services was used as the main cloud provider, which manipulates the data using serverless Lambda functions. In order to establish the communication with Microsoft tools, Power Automate was used as an API registry for the requests sent by the user.

Results and Comparison with State-of-the-art

The functionalities of the skill developed for Alexa for Uni presented before were already implemented as a proof of concept, and presented to the KES-2020 conference[2]. A set of tens of questions are available to the user, and the architectural design is easily adjustable to changes and improvements.

The developed skill is not the only one of its kind, as other universities started to make the most out of this technology to implement their own smart assistant, such as Lancaster University[3] and Northeastern University[4]. In comparison with these two, the proposed skill offers a larger spectrum of services, one being the integration with Microsoft software products, which answers directly to the needs of the virtual e-learning situation currently happening around the globe.

Considering the difficulties of accessing the world wide web pages that people with visual impediments or the ones who are diagnosed with autism face, the benefits of such a solution are considered to be tremendous, and in the end, it brings a great value to a great need of the society[5].

Conclusions

The range of capabilities of this skill and project are vast, and for now, as the core exists, the new features are yet to be developed. In the future, the prototype aims to be enhanced with interactive quizzes that help the student prepare for exams, or even with education systems, which can notify the student about the grade received on certain exams as soon as they are posted.

As times are changing, the project will change as well, adjusting by the needs of the academic environments, learning from the results it will generate, and in the end, it aims to boost the statistics such as graduation rates and students' satisfaction.

When it comes to privacy and security, these areas are yet to be developed, considering the setup of users' Microsoft accounts in the system, personalised schedule, and GDPR concerns. To achieve a level of professional confidentiality settings, different services that offer build-in solutions can be used.

Furthermore, the choices of cloud providers and smart speakers are not limited to Amazon Web Services and Alexa, and in the future, the project aims to explore other alternatives of implementation, such as Google Cloud, Azure, when it comes to cloud providers, and Google Home, when it comes to smart speakers. In this manner, we can compare and contrast the capabilities of each, and understand better the factors that one should have in mind when implementing such a solution.

Acknowledgements

I would like to express my gratitude to my teachers, Professor Phd. Diosan Laura and Lecturer Phd. Serban Camelia, for trusting me along the way with this project, and guiding me throughout this journey.

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