Low-code Development Platform

XOne Assist

Virtual Assistant based on Augmented Development and Continuous Machine Learning

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Overview

XOne Apps powered by Artificial Intelligence

Artificial Intelligence has given rise to the creation of systems that learn, adapt, and potentially act independently. The ability to use AI has the aim to improve decision making, reinventing business models and ecosystems.

The market is being changing from an environment in which data scientists need to partner with apps developers to create improved AI solutions, to a scenario in which developers themselves are already able to operate by themselves by using predefined models delivered as a service.

This provides the developer with an AI algorithms and models ecosystem, as well as development tools adapted to integrate AI capabilities and models into a single solution.

AI offers new opportunities to developers as it is applied in the automation of several functions related to data science and testing functions.

Machine Learning aims to develop techniques that allow computers to be learned in such a way that they are able to generalize behaviors from information provided in the form of examples. It is therefore a process of knowledge achieving.

ML has a wide range of apps, including search engines, medical diagnostics, fraud detection, stock market analysis, games, robotics and, in our specific case, recognition of speech and written language.

At the platform level, XOne has implemented an own virtual assistant based on augmented programming and continuous learning system that allows the apps development through non-traditional programming tools. More specifically, our XOne Assist encourages programming interactions that are increasingly closer to the everyday life tasks.

Our continuous learning system is based on supervised learning, since we use an algorithm that establishes correspondences between the inputs and the desired outputs of the system. The knowledge base of this system consists of examples of previous labeling.

XOne Augmented Development

XOne augmented development is working on two main key pillars: the natural human conversation and the identification of non-specialized patterns through different means.

For instance, XOne technology allows dictation or writing to the XOne Assist virtual agent: "I want to create a map where the work orders of the current day are shown" or, we can also "show a drawing" to the virtual agent's camera with an own freehand design, and the continuous automatic learning module of our agent will propose the code that considers necessary to implement it.

Continuous Learning System

The continuous learning system in XOne allows each project created in the Platform to have its own training ecosystem founded on the general knowledge of the Platform and the specific aspects of each project, which generates the most accurate response possible to each issue that

the developer poses for every project in the augmented programming environment.

For instance, if the programmer creates a function to calculate the geo distance between two points based on the overall experience of the Platform and an note is associated, when in the project he wants to insert such action to some element, he will only need to use the note that was associated by him earlier.

The combination of these two work methodologies will allow to approach and / or speed up the apps programming with no great previous requirements at the time to propose complex solutions:

- XOne Assist does not need previous installation by the user, everything is accessible from its browser.
- XOne Assist allows the mobile apps programming to people with less technical knowledge than the conventional developer.
- XOne Assist optimizes the developments for advanced users.
- XOne accelerates decision making based on experience.

"XOne Assist is integrated into the chat of any XOne project and has several means to interact naturally with the user".

1 Non-specialized writing in a chatbot environment, easy to access and immediate integration with your code. In this way, the user, using a natural language, can write wishes, orders, queries ... which will be analyzed by the virtual agent and as soon as the complete designed process is carried out, it meets the expectations posed by the user.

2 Dictation speech recognition, which allows to naturally speak and with no interruption to the Assistant to create, through a trusted environment, all the commands required by the platform user.

3 Images capture for the approximation of specialized designs as support to the programming. It is allowed to upload a specific capture, or analyze a complete video streaming sequence.

4 Direct interaction with the mobile device through a new "Touch- to-Talk" technique created exclusively for the immediate native programming on XOne technology, which allows modifying the app without any physical medium other than the mobile device itself.

XOne Assist is a step forward in the AI development applied to the creation of complex apps for mobile devices and responsive web.

> "By combining all the technologies available in XOne, it is possible to increase the productivity in the creation from scratch of mobile native apps and responsive, collaborative web spaces with reuse of teaching based on the inherent experience and the community.

With a 100% collaborative environment, a group of people can create, debug and deploy apps using several tools and techniques simultaneously, in many cases without going too far from the natural behavior for any daily task, in short, XOne Assist allows the routine tasks automation to very short term.

Modules

XOne Assist start-up supposes a several years planning * in which certain departments of the company analyze and show the value of the AI techniques by identifying specific use cases.

To address the challenges involved, developers of innovative apps are working on the following modules evolution:

- Incorporation of advanced speech recognition "Voice-to-Text" on Google's "Cloud Speech to Text" or "Amazon Transcribe".
- Images capture by streaming.
- Machine Learning module over TensorFlow and NLTK (Natural Language Tool Kit) on which it has been modeled:
    - Text analysis oriented to programming
        - For programming actions
        - For assistance request in programming
        - For searches of part of the project code
    - Schema analysis oriented to design
        - For layouts generation
        - For identified elements insertion
    - Automatic code generation
    - Automatic code reuse

- Automatic code query
- Proposal of the support associated to the entered code
- Proposal of sample code

- Immediate visualization on the physical device of the code generated by XOne Assist (Hot Swap Debugging module).
- Immediate development on device without other intermediate means, and by a new XOne technology "Touch-to-Talk".

*Note: a roadmap is attached at the end of the document.

> “The current market demands the incorporation of new services and technologies that add value to the digital solutions”.

XOne Assist Skills

The contextual knowledge experience, the domain specificity and the ability to train vocabularies and personalized images through automatic learning will be essential to the voice-to-text apps success or "Draw-to-Code".

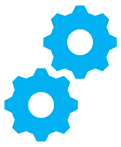
As a result of all these developments, XOne Assist offers the following skills:

Augmented Development

When entering in the chat a sentence with any of the actions and elements recognizable by the Virtual Assistant, it will automatically perform the action on the requested element. This action will have its immediate reflection both in the project code and in the physical device, as long as the "hot debugging" option has been enabled.

Besides, the virtual assistant has an advanced voice recognition that, when enabled, allows the user to dictate the order. The voice assistant is shown at the top of the chat by a color red button, which is enabled each time the voice is picked up by the user.

Of course, the hybrid interaction with the virtual agent is allowed too, that means that the user can combine the verbal commands with text inserts in the same conversation with the virtual agent.



Programming Assistance

XOne Assist also offers programming support from the project chat. The user is allowed, both by voice and by text, to make a query about a certain code or functionality. Assistance is offered at two levels:

- Search for an example code on the question asked: in case of finding it, the agent shows it in a new floating window that allows the user to copy it to be able to insert it, either completely or partly, in the project which he is working on.
- Optionally, the agent can also show a list of links to our XOne Wiki with information related to the question about XOne code made.

Code Search

Another of the features included in the XOne Assist is the code search, if in the chat it is requested to look for a fragment of the code of the project on which it is, the assistant will position the cursor of the code window in the first of the rows in which that appears, allowing with some back and forth arrows to move among the rest of the rows where the same expression is found.

Draw-to-Code

This module allows the XOne user to generate real screens of the app with its main elements by showing schemes of them (either complex mockups or freehand schemes).

The continuous automatic learning of the virtual agent recognizes the screen model that most closely approximates the proposed scheme graphically and generates its corresponding code in the project.

Once again, in case having enabled the hot debugging option, these screens can be immediately seen on the physical device which you are working on. The code generated by XOne Assist will also be accessible in the project code window.

Touch-to-Talk

Finally, based on the immediate native programming, XOne has developed this leading-edge functionality to allow apps to be developed / modified directly on the device. For this, the user programmer has a button that enables the "design" mode that appears in each and every one of the screens of the app.

If any of them is decided to be modified, the user should only click on that button to change from "normal" to "design" mode. From that moment, the user can mark any of the elements of the screen (the one he wishes to modify) and through concrete actions of the fingers over the screen, the element will be able to be scrolled, increased or reduced.

At the same time, the microphone of the device remains enabled so that orders are issued, identical to those of the chatbot, so that the elements can also change their properties and / or new elements can be inserted and eliminated.

Findings

The combination of the AI functionality of our XOne Assist together with XOne DevOps Integration * that facilitates a fast and proven integration with the main DevOps tools of the market, ensures a high increase of productivity and competitiveness of all those IT companies that work on the XOne Platform.

* Note: consult the "XOne DevOps Integration Insight"

The cutting-edge development environments powered by AI automate both the functional and the non-functional aspects of the apps and have led to a new era of the "developer of citizen apps".

"In this new era, non-professional developers will be able to use AI tools to automatically generate new solutions".

The tools allowing non-professional developers to generate apps with no code are not new, but it is expected that AI-based systems will drive a new level of flexibility, since they will allow non-professionals to create much more dynamic, open and complex solutions in minimum development times.

Roadmap

2017

-1stQ: XOne Cloud Studio v1
-2ndQ: Hot-swap debugging on device
-3rdQ: Image capture by streaming OCR
-4thQ: XOne Wiki contents review

2018

- 1stQ: XOne Chat generation by Project on Cloud Studio v2
-2ndQ: Advanced Voice Recognition
-3rdQ:Text Analysis oriented to programming
-4thQ: Automatic code generation

2019

-1stQ: Virtual Agent over chat-voice (Beta V)
-2ndQ: Programming Assistance
Touch to Talk (Beta V native code)
-3rdQ: -Virtual Agent over chat-voice (release)
-Touch-to-Talk (Beta V responsive web)
- Draw to Code (Beta V)
-4thQ: -Programming Assistance (release)
-Touch-to-Talk (release)

2020

-1stQ: Draw-to-Code (release)
-2ndQ:

Thanks!!!

Limits do not exist with XOne!!!

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