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LabTwin Voice Activated Lab Assistant To Launch At BIO

by

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Despite the scientific innovations and medical advances coming out of labs, over 70% of early-discovery experiments are not reproducible. This is a result of a number of different issues such as human error, poor note-taking, bad handwriting and inefficient workflows, along with the high cognitive load placed on today's researchers.

With the expansion of the Internet of Things (IoT), voice-activated artificial intelligence (AI) has become a key tool in a range of settings particularly in the consumer market. This technology is extending into the biomedical world where voice-powered assistants are in use by patients. Voice assistants have been developed that can alert patients to take their medication, go to appointments, and they can even provide information about specific disease symptoms. The technology is also established as a clinical trial tool, providing participants guidance on trial structures and trial-related information that may need explanation.

Although voice-supported technologies could greatly improve documentation processes and workflows, they are still largely missing in the laboratory environment. The launch of LabTwin's technology, which brings AI, machine learning and voice-recognition technologies into the lab, will address this and serve as a driver for future science.

Challenges In The Lab

Reproducibility is fundamental in R&D. At every stage of discovery and development, validation of results can only happen if scientists are able to reproduce the work with precisely the same result. It is clear that proper documentation and a standardized protocol are critical to reproducibility. Accuracy is paramount and is a real challenge for scientists who have to record lab results, produce reliable documentation, adhere to a clear protocol process and achieve reproducibility.

There has been some digitization in the lab to help manage data quality, data security and data compliance. Some researchers are using electronic laboratory notebooks (ELNs), but many have found that importing and documenting their data can be more time-consuming than the traditional documentation methods they are used to. Complicated interfaces are part of the problem and researchers can have difficulty accessing and navigating the software.

What is more, the lab is an environment that contains hazardous chemicals, sterile cultures and other requirements crucial to conducting experiments. The ELN cannot always be used in these conditions, which means that the scientist must leave the lab to complete documentation on the process used. This can result in interruptions in research workflow and can lead to time-management issues.

Streamlined, Integrated, Hands-Free Documentation

Certain companies are adopting initiatives to switch to working paperless within a few years. With its voice-powered lab assistant, LabTwin addresses the challenges that many researchers face when digitizing laboratory data or working with ELNs. Not only is LabTwin hands-free, it also allows labs to achieve streamlined paper-free documentation. The paper stage of handwritten notes is completely eliminated with LabTwin. Researchers can take voice notes at the bench, which can be readily transferred into existing protocols or other lab documentation. There is no need for transcription into a digital format.

The Power Of Lab Digitization

LabTwin empowers better data capture and real-time data-driven decision-making (DDDM). Voice assistance in the lab is a potential game-changer in how scientific organizations and researchers work. It facilitates simultaneous data capture and notation without having to remove gloves or interrupt experiments.

Overall, lab data digitization improves processes, simplifies workflows and makes R&D more efficient. And with increasing advances in machine learning and artificial intelligence,

digitization in the research environment is set to become an integral part of every laboratory.

Machine learning is a fast-evolving part of artificial intelligence and is a feature of continuous data input. As this AI development advances, tools based on such autonomous learning will become a crucial part of the work process in research labs.

We are moving into an era where AI enables communication with and between automated lab instruments and can constantly learn from all information saved in a system, such as experimental protocols and data points. This means that language-based AI programs will be able to extract relevant research data from publicly available databases, such as PubMed.

As LabTwin is set to become an invaluable tool, one early adopter, Ernesto Diaz-Flores, assistant adjunct professor at the School of Medicine at the University of California, San Francisco, says:

> *"LabTwin is a research tool we all, as scientists, can greatly benefit from. We are at an era in which technology is at our fingertips, and having a tool like LabTwin that allows integration of multiple functionalities within a laboratory annotation system greatly simplifies our research workflow. I am convinced LabTwin will change research."*

Benefits Of LabTwin

Magdalena Paluch, CEO and co-founder of LabTwin, sums up the advantages of using VA tech in the lab:

> *"Digital assistants will free employees to work on the things that matter most. New forms of interactions such as voice or image recognition, in conjunction with machine-learning technology, will push businesses further than ever before. LabTwin has the power to accelerate communication, unleash creativity and increase productivity by unshackling scientists from keyboards, desktops and hard-to-access folder structures. It's the digital twin always within reach."*

It is important to highlight that LabTwin's technology is voice-first, but it is not a voice-only digital lab assistant. It is easy to use, so that by simply talking to the LabTwin app, researchers can:

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  - Free up their cognitive load through support in capturing and accessing information at the bench, just in time;
  - Document every step of their work at the bench, taking hands-free notes;
  - Set reminders or timers from anywhere in the lab;
  - Create entire order lists without leaving their workspace; and
  - Structure data into tables, bulleted lists, protocols and other formats;
  - Ensure data are kept safe and secure through encryption and private networks;
  - Create a complete audit trail with automatic timestamps, electronic signatures and secure data storage.

Immediate Response And AI Learning

Researchers can save experimental details immediately via the app by directly dictating their observations, experimental conditions, data points and results while they work. The lab assistant transcribes the recorded speech and automatically synchronizes with the web-based app so all observations are noted and available to scientists when they work on their computers.

What is more, the LabTwin app is AI-based and can learn from what it is told. For example, if voice notes taken at the bench are later corrected, the software will study these corrections and learn from them, becoming smarter and more in tune with an individual researcher's workflow.

Researchers can effortlessly update protocols, including images, and share these with colleagues. This allows laboratories to standardize protocols, enabling the reproduction of experiments and data, and prevents researchers from having to repeat experiments because of lost data or experimental conditions not having been documented. As a result, researchers can work faster and more efficiently, leading to more reliable and therefore, more reproducible research. Significantly, LabTwin is developing the technology to provide a digital step-by-step guide of researchers' protocols, allowing them to check off steps and make annotations directly to each specific step.

Real-Time Support

As well as helping scientists capture data, LabTwin provides information in real time, supporting more informed decision-making. Once the system accumulates sufficient expertise in experiment workflows, protocols, and scientific methods and technologies, it will be able to offer critical information to the scientist at any point in time. Scientists will no longer have to return to their desktop and search through complex folder structures but instead will be able to run a quick hands-free query and receive results while staying focused on the experiment underway. This could also enable collaboration and communication with other scientists within or outside of a specific lab.

LabTwin also streamlines stock requests and inventory management by allowing all lab workers to add missing supplies to a lab-shared shopping list as they work.

Voices Of Experience

Technician Sarah Schlagowski is a LabTwin user, working in Alexander Hahn's lab at Deutsches Primatenzentrum GmbH. She was aware that her way of documenting was circuitous – she was using numerous media: paper, digital charts, digital and printed protocols, pictures and post-it notes. She compared her method of working with the process LabTwin offers and found that the VA lab assistant saved time and was easy to use.

"With LabTwin, I can make more precise voice notes than I can by hand. I can immediately record my own thoughts and experiences about an experiment. That's important because after a busy day I may forget to write down little but important things that could help to reproduce my results," Schlagowski says.

Assistant Professor Marcin Grabowicz works to find new therapeutics for bacterial infections at Emory University School of Medicine. He is another early LabTwin adopter. For him, LabTwin is at its best when scientists are working with chemicals, tissue cultures and assays – where there is a need to minimize distraction and avoid stopping to write notes.

"I think the immediate note-taking will help with reproducibility. It notably reduces the gap between performing a task and noting exactly how that was performed. It's great to track down where minor deviations from a protocol were the difference," says Grabowicz.

Empowerment

LabTwin's goal is to empower scientists by giving instant access to information, allowing simple and easy documentation and taking care of everyday tasks such as setting timers and reminders, and creating order lists. The assistant frees up scientists' cognitive load and allows them to focus on things that really matter.

Ultimately, this scientist-centric solution is driving a shift toward on-demand scientific intelligence. LabTwin aims to make new technologies accessible to the broader community of scientists, beyond just tech domain experts. It strives to become part of an ecosystem that enables pharmaceutical professionals to enjoy secure, industry-standard digital infrastructure with core research functions and easy access to deep analytic tools.

With this launch at BIO, LabTwin is unveiling some of its new offerings to better serve its enterprise biopharma clients and form collaborations with top names in lab informatics and instrumentation. To get more information, meet LabTwin at booth # 4065, join their company presentation in theater 3 (level 200) on June 3rd or attend the *Harnessing AI & Machine Learning To Improve R&D Efficiency And Reproducibility* Round Table at the BioProcess Theater, Booth #3211, on June 4th at 2:50pm.

Visit the *LabTwin* website to learn more, *sign up* to access the app or contact them to *request a demo*.

Website: *http://bit.ly/2H352IS*

Sign up: *http://bit.ly/2Y5tSNS*

Request a demo: *http://bit.ly/2H48frF*