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Moët Hennessy and partners are testing AI sensors that flag wine defects before they can be smelled

The project with Analog Devices and UC Davis targets Fresh Mushroom Aroma, but researchers released no peer-reviewed data

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Moët Hennessy, Analog Devices and the University of California, Davis said Wednesday they are working together on a sensor and artificial intelligence platform designed to detect chemical signals from grapes, juice and wine earlier than standard testing

methods, with the goal of spotting quality risks before they become visible or can be smelled.

The partners announced the project in Paris and Wilmington, Massachusetts, describing it as a new application of chemical signature detection technology that traces its roots to earlier research at the Massachusetts Institute of Technology. Analog Devices, or ADI, said it has continued developing the platform and is now testing it with Moët Hennessy’s wine research teams and UC Davis specialists in viticulture and enology.

According to the announcement, the first target is a defect known as Fresh Mushroom Aroma, or FMA, which can affect a wine’s smell and market quality. The organizations said researchers were able to identify samples with a higher risk of developing that defect at an early stage, before it could be detected through conventional approaches.

The companies and university did not release a peer-reviewed paper with the announcement, and they did not provide detailed performance data such as error rates, the size of the test set, or a timeline for large-scale commercial deployment. Their statements described the work as a demonstration and an ongoing research effort rather than a finished commercial system.

The technology is intended to read volatile chemical signatures emitted by grapevines, must and finished wine. ADI said its sensing platform collects a broad set of chemical data and uses machine learning to sort through the signals and identify patterns linked to biological processes and possible quality problems. Instead of testing only for a fixed list of predefined compounds, the system is meant to learn from larger chemical datasets and flag combinations of signals that may indicate trouble earlier in the production cycle.

Moët Hennessy said its Robert-Jean de Vogüé Research Center built a library of samples and related data that was used to train the algorithms for FMA detection. UC Davis, which has one of the best-known viticulture and enology programs in the United States, is contributing research expertise and training for future users of the system.

The project brings together three different parts of the wine supply chain. Moët Hennessy is the wines and spirits division of LVMH and oversees a portfolio of wine and Champagne houses. ADI is a semiconductor company that has been expanding into AI-enabled sensing systems. UC Davis has long worked with growers and wineries on vineyard science, fermentation and wine quality.

In statements released with the announcement, executives and researchers said the aim is to support winemakers and vineyard managers, not replace them. They said earlier information about vine stress, fermentation conditions and quality risks could give human experts more time to decide whether to change vineyard practices, sort fruit differently, adjust cellar operations or isolate lots that may be heading toward a defect.

The same approach is also being studied for other uses. The organizations said future work may include early detection of vine diseases, soil assessment and identification of other wine defects, especially those tied to climate-related events such as wildfire exposure. Smoke and other environmental pressures have become a larger concern for growers in several wine regions in recent years, and researchers have been looking for faster ways to measure their effect on fruit and wine.

That is one reason the announcement matters beyond a single technical experiment. If the system works reliably outside the lab and at industrial scale, it could help wineries intervene earlier, reduce losses tied to spoilage or downgraded lots, and tighten quality control in a business where small aroma changes can affect pricing and brand value. The broader beverage industry, including premium wine and spirits producers, has been investing more in sensor-based quality tools as climate volatility and production costs rise.

The partners also framed the work as part of a broader effort to make wine production more resilient. Ben Montpetit, chair of the Department of Viticulture and Enology at UC Davis, said in the announcement that the grape and wine sectors face major global challenges and need both better information and people trained to use it. Manuel Reman of Moët Hennessy said the work could help teams anticipate quality risks before they become visible. Max Shulaker, who leads ADI’s Health Solutions business unit, said

the goal is to move from reacting to defects to anticipating them.

ADI said it eventually intends to make the technology available for wider industrial use, while Moët Hennessy and UC Davis are exploring whether shared reference libraries could benefit the wider grape and wine industry. The announcement did not say how access would be structured, whether the data libraries would be open to outside producers, or what costs wineries might face to adopt the system.

The project also reflects a wider shift in agricultural technology, where sensor makers are trying to combine chemistry, AI and field data into tools that can be used earlier in the production process. In wine, much of quality control still depends on a mix of lab testing, tasting, visual inspection and experience in the vineyard and cellar. Supporters of the new platform say it could add another layer of information by detecting patterns too subtle or too early for current workflows.

For now, the claims remain those of the organizations behind the project. What they have announced is an early demonstration that AI-guided chemical sensing may be able to identify one important wine defect before it fully develops, and that the same approach may have broader uses in vineyards and wineries if the results hold up in further testing.