

Shaping the future of intelligent fan solutions

By using Edge Machine Learning



Although all fans may look alike, they are used in various ways and for different purposes. For instance, a fan in a restaurant kitchen operates under different conditions than one in an industrial production plant, or one that is drying hay on a farm. What may seem typical for one fan can be abnormal for another. Therefore, the best approach is to treat each fan individually, understand its unique conditions, and optimize its performance accordingly. This necessitates customized automation, and Edge Machine Learning provides a suitable solution by utilizing sensor data to train a unique machine learning model for each fan, predict its expected behavior, detect any deviations, and simulate the optimal settings for its operation.



This approach allows you to do condition monitoring of every individual fan, using your existing sensors and actuators like voltage, air pressure, air flow, and vibration to generate predictive health indicators and indicate remaining useful life. You know everything there is to know about your fans and how to run them, but this will empower you to also operate them based on their surroundings and applications. This is the next evolution for fans, enabled by connectivity (IoT) and digitalization, where you extend the relationship with your products out into the field. And the insights do not stop at the fan itself. It will also sense if a filter is getting clogged, which turns the fan into a smart sensor – Fan-as-a-Sensor – adding even more value to the process or machine.

Ekkono provides the Edge Machine Learning software that enables all of this. Yes, it's all software that due to its

tiny footprint can run on virtually anything, from an edge gateway to a PLC, or even onboard the fan controller. We do learning on the device, using what is called incremental online learning, where the super-local conditions and configurations, are automatically incorporated. This way you reduce the amount of data that is sent to the cloud, enabling instant sharing of insights on-prem, improving data integrity, while still using the high-definition sensor data at the edge, and even re-learning when the conditions change.

Sounds interesting? Well, we thought so! Then wait until you see the use cases that this enables:

- Batch and Incremental Learning
- Vibration analysis – catch indications of abnormal vibration patterns before they become fatal and extend remaining useful life.
- Energy efficiency – optimize energy consumption by adjusting settings to super-local conditions.
- Condition monitoring – learn normal behavior to determine need for maintenance.
- Fan-as-a-sensor – detect deviations outside the fan itself to enhance the machine or process.
- Self-optimization – simulate settings in real-time to get best performance and minimize energy consumption and wear.
- Auto-installation – run self-optimization during installation for best configuration.
- Virtual sensors – replace expensive, hard-to-deploy, or unreliable physical sensors with calculated real-time values.

Now, all you have to do is contact us to learn more. You find more information on the site, to schedule an inspirational call, send a request to info@ekono.ai.