NovoViz
Light has more to say than just how bright it is

In a nutshell
The emergence of photon-counting cameras has paved the way for new developments in fields such as high-speed imaging, computer vision, medical imaging and more. The ability of these cameras to provide single-photon sensitivity and short exposure times has the caveat of very large output data rates. This results in increased power consumption and high demands on the system hardware that has to read large amounts of data and then process it very fast.

A promising application field for these types of cameras are Unmanned Aerial Vehicles (UAVs), also known as drones. These have emerged as transformative technological tools with a wide range of applications. The importance of UAVs lies in their ability to perform tasks efficiently, safely, and autonomously in various fields such as agriculture, infrastructure inspection, surveillance and security, environmental monitoring, delivery services, mapping and surveying, filmmaking, and many more. The range of a UAV, or the distance it can fly on a single mission, is influenced by several factors, including the payload it carries. This refers to any additional weight or equipment beyond the basic UAV structure, such as cameras, sensors, or other specialized instruments. In addition to the weight, the power requirements of these payloads, including data acquisition, processing, and transmission, contribute to the overall energy consumption. Unfortunately, while UAV obstacle detection systems have made significant advancements, they still have certain limitations. Factors such as the speed of the UAV, sensor range and resolution, environmental conditions and the size and nature of obstacles can impact the effectiveness of obstacle detection and avoidance. A fast and easy to use single-photon camera can address these limitations and expedite UAV development.

Why is our technology important?
NovoViz designs and manufactures single-photon computational engines in different technology nodes for applications that demand high sensitivity and high speed but cannot handle large amounts of data. The main purpose is to make single-photon technology more accessible to everyday users, as currently available single-photon cameras are specialized pieces of equipment with high technological demands. Our solutions operate orders of magnitude faster and with significantly lower hardware demands than other systems and will be key in the development of emerging technology in fields such as machine vision and quantum imaging.

The benefits of our solution
- On-chip computation
- Fast processing
- Reduced power consumption

Keywords
Single-photon sensitivity, on-chip computation, reduced power consumption

Founding Team
Andrada Muntean, CEO, has a PhD in microelectronics from EPFL. Andrada has more than 6 years of experience in CMOS image sensors. - linkedin.com/in/andrada-muntean-81200b88

Andrei Ardelean, CTO, has a PhD in microelectronics from EPFL. He has more than 6 years of experience in single-photon avalanche diode imager research and development and systems-on-chip designs. - linkedin.com/in/andrei-ardelean-68388452

Samuel Cheng, CFO, has more than 15 years of experience in research and development of UV detectors at the Advanced Detector Arrays, System, and Nanoscience Group at NASA JPL. Samuel has received a MBA from USC. - linkedin.com/in/srcheng

Ekin Kizilkan is currently a PhD student at AQUA LAB at EPFL with more than 5 years of experience in single-photon design in both CMOS and InGaAs technologies. - linkedin.com/in/ekin-kizilkan-40277b86

Utku Karaca is currently a PhD student at AQUA LAB at EPFL with more than 5 years of experience in single-photon design in both CMOS and InGaAs technologies. - linkedin.com/in/ekin-kizilkan-40277b86

Edoardo Charbon, chief advisor, is an EPFL Professor with more than 35 years of experience in CMOS sensor designs. He has been the driving force behind the creation of deep-submicron CMOS SPAD technology. - linkedin.com/in/edoardo-charbon-258613

École polytechnique fédérale de Lausanne

startup launchpad

Get in touch
We'd love to speak to you more about our project.
You can book some time with us here: andrada.muntean@novoviz.com