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HUN-REN
Hungarian Research Network

TECHNOLOGY OFFER
HOLODETECT

ARTIFICIAL INTELLIGENCE MEETS DIGITAL HOLOGRAPHIC MICROSCOPY

Detecting microparticles, microorganisms, counting various cell species in liquids to ensure quality is paramount across multiple industries, including microalgae culturing, food production, water utilities, and beyond. A wide range of technologies and methodologies are available to measure critical parameters of these processes. However, many of these solutions can be labor-intensive, costly, and challenging to integrate into existing industrial workflows.

SOLUTION

Our research team has developed solutions that utilize a range of advanced technologies. These include digital holographic microscopy, fluorescent microscopy, and cutting-edge artificial intelligence. Our primary goal is to accurately classify and count cells in-vivo and precisely measure various cell parameters. To achieve this, we design compact devices that operate completely automatically.
Holodetect devices alleviate the need for manual haemocytometry, offering a significant advantage in scaling up operations in microalgae farming, food processing operations or ensuring water safety for water utilities. Automation in quality control is crucial for cost efficiency and maintaining consistent quality. Holodetect devices are customizable to meet the specific needs of various

BENEFITS

- **Fully automated cell counting**
- **Alleviates the need for manual haemocytometry**
- **Both laboratory and integrated industrial equipment**
- **Measures size and morphological distribution of the cells**
- **Combined labeled and label-free measurements**

APPLICATION

- **Automated quality control in food processing industry**
- **Integrated culture monitoring in microalgae farms**
- **Water safety control for water utilities**
- **Microplastics detection**

TRL 7 VALIDATED PROTOTYPE, PROVEN TRACTION
SEEKING SERIES A INVESTMENT OF 950K EUR

CONTACT INFORMATION

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PUBLICATIONS

Terbe D.; Orzó, L.; Bicsák, B.; Zarándy, Á. Hologram Noise Model for Data Augmentation and Deep Learning. Sensors 2024, 24, 948.

Terbe, D.; Orzó, L.; Zarándy, Á. Classification of Holograms with 3D-CNN. Sensors 2022, 22, 8366.