

High-speed high-precision laser range finder (LRF)

Information Summary

For review for potential collaboration and/ or licensing

Summary

Technology Overview: Real-time ultrahigh-resolution 2D/3D object imaging, ranging or sensing over very long distances

Applications: Non-contact real-time industrial solutions for measurement, High-resolution depth imaging for multiple reflections, positioning, automation, monitoring, collision prevention etc. Real-time medical imaging

Validation: Experimental proof-of-concept

Needs: Detection accuracy, fast scanning, high depth resolution, transversal resolution, long detection range

Ideal Partner or Receptor: LRF or industrial sensor manufacturer

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Technology summary

Researchers at INRS have recently invented and developed a novel interferometric concept that can be directly used for implementing a high-speed ultrahigh-accuracy coherent LRF capable of providing a measurement range over tens of meters with a high depth-resolution and unprecedented scanning rates. The technology is based on a totally new concept for broadband interferometry. Its key performance parameters are far superior to those provided by presently available technologies, including the time-of-flight (TOF) range finder method and conventional interferometry-based measurement / ranging systems.

Benefits

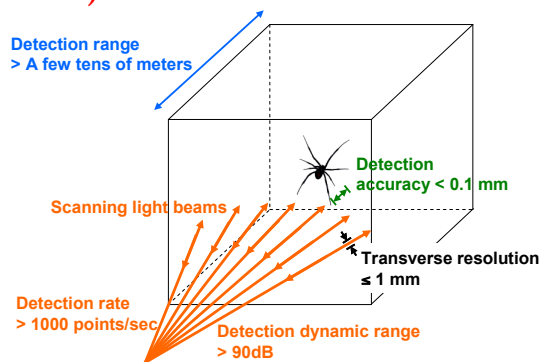
- **Measurement range > ten meters**
- **Range detection accuracy < 0.1mm** - 100-fold improvement over that of conventional LRF

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- **Depth resolution for multiple objects along the line-of-sight (new tomographic feature) - < 5 mm**



- **High transversal resolution $\leq 1\text{mm}$** – over the whole measurement range
- **Ultra-high sensitivity >80dB**
- **Fast scanning operation $\gg 1000$ frames/s** – ideally suited for dynamic measurements
- **Estimated production cost much lower than the Laser Radars**
- **Eye safe, invisible(IR) light source**

Market Need

Non-contact real-time distance measurements, offering spatial accuracy in the micron regime with high resolution tomographic feature and operation ranges over tens of meters, are needed in a wide range of industrial, medical and scientific applications, particularly for dynamic 2D/3D positioning, imaging and detection of non-static micro-featured objects. Our technology provides a drastic improvement over existing technologies, such as the time-of-flight (TOF) method and conventional interferometry, by offering an unprecedented combination of performance specifications.