TERAKI unveils machine learning-based radar detection software for ADAS and AD applications on Infineon's AURIX™ TC4x.

Berlin-based AI company TERAKI has revealed its latest software for safer radar detections, a machine learning-based algorithm running on Infineon's AURIX™ TC4, proven to achieve up to 20% more accurate detections compared to other traditional methods like CFAR.

BERLIN and MUNICH, September 9th, 2022 – Autonomous driving (AD) and advanced driver assistance systems (ADAS) rely on the precise sensing of the vehicle's surrounding environment to safely navigate. Manufacturers around the world have turned to advanced sensors and algorithms to enhance perception and reach unprecedented levels of safety. TERAKI, a market leader in edge sensor processing, today released the latest radar detection software that accurately identifies static and moving objects with increased accuracy and less computational power. The real traffic solution runs on ASIL-D compliant AURIX™ TC4x microcontrollers from Infineon Technologies AG (FSE: IFX / OTCQX: IFNNY).

"*We have refined our software to achieve more with less," said Daniel Richart, TERAKI's CEO. "Our solution allows to better detect and to correctly classify static and moving objects from radar signals. In addition, it enables customers to detect obstacles at farther distances. This provides AD- and ADAS-applications with more reliable information and hence better situational awareness that leads to safer decision-making. Ultimately, we ensure safety by reducing inference time and the required processing power at the edge."*

"Automotive radar system performance has drastically increased over the last product generations," said Marco Cassol, Director of Product Marketing for Infineon Automotive Microcontrollers. *"Edge AI processing is one of the many innovations that has helped us drive this increase in radar performance. Infineon's new parallel processing unit (PPU) are now being implemented in TERAKI's unique radar algorithms to showcase next-generation radar performance from Infineon's AURIX TC4x devices."*

As radar turns into the industry standard for cost-effective signal processing, overcoming the limitations of this sensor technology becomes a priority. For example, interference can severely detriment radar detection performance, leading to erroneous detections in difficult multi-target situations, which also carries high processing requirements. Moreover, the precision required for reliable radar classifications involves more data points per frame and sub-1-degree angular resolution, if static and moving objects are to be correctly detected and classified.

TERAKI's machine learning (ML) approach intends to solve this challenge by working with raw data and playing both a denoising and a cognitive role in dissecting information from the radar, identifying targets amid noisy environments, clusters, and other interference while decreasing the processing capacity at the edge. TERAKI's processing pipeline employs ML to reduce the data required to achieve accurate detections while improving the quality and density of data points of individual detections. TERAKI's ML-detection delivers more points per object, leading to less false positives - and thus to increased safety - compared to other radar processing techniques, such as CFAR.

Ported with Infineon's AURIX™ TC4, TERAKI's ML-based algorithm reduces radar signals after the 1st FFT achieving up to 25x lower error rates of missing objects at the same RAM/fps. Compared to CFAR, classification is up to 20 percent higher in precision, and valid detections increase 15 percent more. With this release, TERAKI is improving chipset architecture of edge devices, ensuring real-time processing performance on AURIX™ TC4, which alleviates the computing requirements by consuming 4- or 5-bit bitrates instead of 8- or 32bits without compromising the F1-scores. This leads to up to 2 times less memory required.

About Infineon

Infineon Technologies AG is a world leader in semiconductor solutions that make life easier, safer, and greener. Microelectronics from Infineon are the key to a better future. With around 50,280 employees worldwide, Infineon generated revenue of about €11.1 billion in the 2021 fiscal year (ending 30 September) and is one of the ten largest semiconductor companies worldwide.

Infineon is listed on the Frankfurt Stock Exchange (ticker symbol: IFX) and in the USA on the over-the-counter market OTCQX International Premier (ticker symbol: IFNNY).

www.infineon.com

About TERAKI

TERAKI is a Berlin-based, AI-software company specializing in safer autonomous mobility at lower cost. TERAKI's software enables L2, L3, L4 vehicles to detect and classify objects more accurately in real-time. In a lightweight manner and at the edge, TERAKI software selects and processes large amounts of sensor data (video, radar, and lidar) 10x more efficiently and produces more reliable decisions for safer autonomous operations. Use cases include autonomous driving vehicles such as cars, delivery robots, forklifts, trains and more. TERAKI holds partnerships with leading chipset suppliers such as Infineon and Synopsys. The company currently employs 50 people, with offices in Berlin and Tokyo.

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