Automotive Fmcw Radar With Adaptive Range Resolution

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Automotive Fmcw Radar With Adaptive
--(BUSINESS WIRE)--Metawave Corp. announced delivery of the automotive industry's first ... conventional Frequency-Modulated Continuous Wave (FMCW) radar chip developed by Texas Instruments ...

Metawave demonstrates First 77GHz Analog Beamsteering 3D Radar with the Highest Resolution and Accuracy at Long Ranges for Safe, Intelligent Driving on the Road to Autonomy
Description: The ASH Series of high performance pressure transducers have been designed for extreme endurance and high temperature installations on motorsport and automotive applications. These are ...

Ash Level Sensors
The technology incorporates real-time adaptive algorithms that change with actual operating conditions by sampling vehicle data and managing energy flow across the vehicle's components.

Frost & Sullivan award goes to Azure Dynamics
nFore's technology includes adaptive acoustic echo cancellation ... The echo cancellation feature provides enhanced sound quality in automotive cabins. The reference design is based on CSR ...

Radar solutions for a Developing World reflecting the challenges faced in developing countries in terms of keeping up with technology, but also the novel ways in which technology can be used in the developing world to solve problems

A radar sensing system for a vehicle includes a transmitter, a receiver, a processor and an adaptive filter. The transmitter is configured to transmit a radio signal. The receiver is configured to receive radio signals that include the transmitted radio signal reflected from objects in the environment, as well as further including other radio signals transmitted from at least one other radar sensing system. The receiver is further configured to produce a sampled stream. The sampled stream is provided to the processor. The processor, responsive to further processing of the sampled stream, controls the adaptive filter to filter the sampled stream, such that the other radio signals transmitted from the at least one other radar sensing system are removed from the received radio signal.

Radar Expert, Esteemed Author Gregory L. Charvat on CNN and CBS Author Gregory L. Charvat appeared on CNN on March 17, 2014 to discuss whether Malaysia Airlines Flight 370 might have literally flown below the radar. He appeared again on CNN on March 20, 2014 to explain the basics of radar, and he explored the hope and limitations of the technology involved in the search for Flight 370 on CBS on March 22, 2014. Get His Book Now Coupling theory with reality, from derivation to implementation of actual radar systems, Small and Short-Range Radar Systems analyzes and then provides design procedures and working design examples of small and short-range radar systems. Discussing applications from automotive to through-wall imaging, autonomous vehicle, and beyond, the practical text supplies high-level descriptions, theoretical derrivations, back-of-envelope calculations, explanations of processing algorithms, and case studies for each type of small radar system covered, including continuous wave (CW), ultrawideband (UWB) impulse, linear frequency modulation (FM), linear rail synthetic aperture radar (SAR), and phased array. This essential reference: Explains how to design your own radar devices Demonstrates how to process data from small radar sensors Provides real-world, measured radar data to test algorithms before investing development time Complete with downloadable MATLAB® scripts and actual radar measurements, Small and Short-Range Radar Systems empowers you to rapidly develop small radar technology for your application.

This book throws a lifeline to designers wading through mounds of antenna array patents looking for the most suitable systems for their projects. Drastically reducing the research time required to locate solutions to the latest challenges in automotive communications, it sorts and systematizes material on cutting-edge antenna arrays that feature multi-element communication systems with enormous potential for the automotive industry. These new systems promise to make driving safer and more efficient, opening up myriad applications, including vehicle-to-vehicle traffic that prevents collisions, automatic toll collection, vehicle location and fine-tuning for cruise control systems. This book's exhaustive coverage begins with currently deployed systems, frequency ranges and key parameters. It proceeds to examine system geometry, analog and digital beam steering technology (including "smart" beams formed in noisy environments), maximizing signal-to-noise ratios, miniaturization, and base station technology that facilitates in-car connectivity while on the move. An essential guide for technicians working in a fast-developing field, this new volume will be warmly welcomed as a powerful aid in their endeavors.

DSP is utilized in just about every electronic system or device. DSP is taking one piece of information be it data, image, video, or audio, most likely compressing, sending, and filtering it to another location within your application to appear in the form of a document, picture or video. Like Smith before it, this book is different to most on the market by following a popular applied approach to this tricky subject, and will be the perfect starting point for engineers who need to get into DSP from the ground floor. This book starts with the absolute basics of this integral

process. No experience is expected and with no prior knowledge taken for granted, a refresher chapter on complex numbers and trigonometry can be found at the very beginning of the material. Real-world worked examples, reference designs, and tools - including online applets that enable readers to visualize key principles - complete a package that will help engineers who that needs to learn anew or refresh their memory on this essential technology as they move to projects that require DSP familiarity. Dismayed when presented with a mass of equations as an explanation of DSP? This is the book for you! Clear examples and a non-mathematical approach gets you up to speed with DSP Includes an overview of the DSP functions and implementation used in typical DSP-intensive applications, including error correction, CDMA mobile communication, and radar systems ~

Radar is an acronym for RAdio Detection And Ranging. In general terms, it is a machine that uses radio waves for object-detection in its near periphery. It transmits radio waves in a known direction, which when intercepted by an obstruction/object are reflected by its surface and are received back at the radar system. The round trip delay time along with the known velocity of radio waves gives an accurate measurement of the distance of the object from the radar system. In a somewhat similar fashion, some radars are even capable of measuring the velocity of this object. Frequency-modulated continuous-wave (FMCW) radar is one such radar system, which is a subclass of continuous wave (CW) radars, where a continuous sinusoidal radio energy is transmitted, reflected, and received back at the radar system. These radar systems are widely used in vehicle automation technologies such as adaptive cruise control (ACC) and collision avoidance systems (CAS) to measure the distance from the nearest vehicles and maintain a safe following distance. But in designing these systems, little attention has been given to security, and these systems have vulnerabilities that are capable of compromising the whole purpose of making such systems. In this work one such vulnerability in FMCW radar was exploited to design an attack that was capable of decreasing the apparent distance, as measured by a radar system. The attack was designed in such a way that there was no tampering with the radar system being attacked. Instead, false distance information was introduced in the return path of the transmitted radio wave by absorbing the original victim transmission and sending out a modified radio wave on the It was shown that the distance could be decreased to alarming values, which at the level of the vehicle automation system results in decreasing the speed of the automobile when actually it should have increased.

This comprehensive new resource provides in-depth and timely coverage of the underpinnings and latest advances of MIMO radar. This book provides a comprehensive introduction to MIMO radar and demonstrates it's utility in real-world applications, then culminates with the latest advances in optimal and adaptive MIMO radar for enhanced detection and target ID in challenging environments. Signal processing prerequisites are explained, including radar signals, orthogonal waveforms, matched filtering, multi-channel beam forming, and Doppler processing. This book discusses MIMO radar signal model, antenna properties, system modeling and waveform alternatives. MIMO implantation challenges are covered, including computational complexity, adaptive clutter mitigation, calibration and equalization, and hardware constraints. Applications for GMTI radar, OTH radar, maritime radar, and automotive radar are explained. The book offers an introduction to optimum MIMO radar and includes details about detection, clutter, and target ID. Insight into adaptive MIMO radar and MIMO channel estimation is presented and techniques and illustrative examples are given. Readers find exclusive flight testing data from DARPA.

The breadth of coverage in this all-inclusive resource makes it suitable for both practicing engineers and advanced researchers. The book concludes with discussions on areas for future research.

Offering radar-related software for the analysis and design of radar waveform and signal processing, Radar Signal Analysis and Processing Using MATLAB® provides a comprehensive source of theoretical and practical information on radar signals, signal analysis, and radar signal processing with companion MATLAB® code. After an overview of radar systems operation and design, the book reviews elements of signal theory relevant to radar detection and radar signal processing, along with random variables and processes. The author then presents the unique characteristic of the matched filter and develops a general formula for the output of the matched filter that is valid for any waveform. He analyzes several analog waveforms, including the linear frequency modulation pulse and stepped frequency waveforms, as well as unmodulated pulse-train, binary, polyphase, and frequency codes. The book explores radar target detection and pulse integration, emphasizing the constant false alarm rate. It also covers the stretch processor, the moving target indicator, radar Doppler processing, beamforming, and adaptive array processing. Using configurable MATLAB code, this book demonstrates how to apply signal processing to radar applications. It includes many examples and problems to illustrate the practical application of the theory.

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