Ultra-Wideband Radar Technology - James T. Taylor - 2010-03-31
In Ultra-Wideband Radar Systems, Taylor introduces the emerging concepts in radar technology that are revolutionizing the way we detect and identify objects. The book presents the necessary background for readers to understand how the latest ultra-wideband sensor technology is currently being applied, or can be applied, in a wide range of applications. The book starts with the physics behind the technology, then moves on to advanced radar system development, to the development of practical systems, and finally to their implementation in real-world applications. It is useful for both experienced practitioners and graduate students with a background in electrical engineering or computer science.

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Ultra-Wideband Radar Technology - Frank J. Tolmasky - 2011-10-30
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unmodulated ultra short pulse, offer many advantages over conventional sinusoidal radars. They are characterised with ultra wide bandwidths offering very high resolutions. UWB radars can be used in applications such as ground probing, imaging, target classification, foliage penetration, environmental screening, remote sensing and others. In these radars the target’s range can be measured by employing the range measuring techniques of conventional radars. However, the absence of a carrier in UWB radars denies the use of the Doppler principle to estimate the velocity of a moving target. Two different types of processors are developed for UWB radars to estimate target velocity. The first processor is based on the concept of time domain filtering implemented by correlation technique. The second velocity processor is based on wavelet transform. The design of these processors and their analysis were carried out by means of computer programming. The performance of these velocity processors have been assessed by simulating variations in different parameters of the processors and the UWB radar. A comparison of three processors with an IF 1.3 Doppler processor used in conventional radars demonstrated the advantages of the proposed processors. It was observed that blind speeds do not occur in both the processors. The analysis of the correlation processor showed that the range and velocity resolution of the UWB radar can be improved simultaneously by decreasing the pulsewidth. Moreover, decreasing the PRF of the UWB radar will increase the unambiguous range and will also improve the velocity response of the processor. The analysis of the wavelet processor showed that its performance is relatively.