The Hidden World of Barcodes

By Professor Richard Tervo

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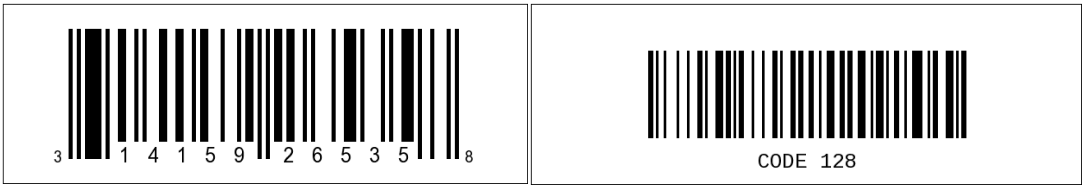
They seem to be everywhere, but how do printed barcodes work and what secret information do they contain? As patterns of black and white lines or dots, barcodes may be considered as a digital communications system, carrying binary information, text and characters that can incorporate error detection and correction, data compression, scrambling and encryption. The underlying mathematics and the engineering design efforts behind modern barcode standards have made their use both practical and widespread. This presentation includes an overview of barcode technology and the internal details of several familiar barcode standards, showing both their utility and their limitations. Specific applications are described, from supermarket codes to airline boarding passes and driver's licences.



Richard Tervo has a B.Sc. (Physics) and M.Sc. (Experimental Nuclear Physics) from McMaster University and a Ph.D. (EE) from Laval University. He has been a professor in the Department of Electrical and Computer Engineering at the University of New Brunswick since 1986. His research and teaching interests include digital signal processing, communications systems, radio and land-based communication protocols. He is also the author of the undergraduate textbook *Practical Signals Theory with MATLAB Applications* (Wiley, 2013). Dr. Tervo is a registered Professional Engineer in the Province of New Brunswick (APEGNB), a member of the *American Society of Engineering Education* (ASEE), and a Senior Member of the IEEE. He is currently Chair of the *IEEE New Brunswick Section* (Region 7).

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