Australian Government

ICTTEN826 Evaluate and apply digital signal processing to communication systems

Release: 1

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Modification History

Release	Comments
Release 1	This version first released with ICT Information and Communications Technology Training Package Version 7.0.

Application

This unit describes the skills and knowledge required to analyse, apply and simulate operation of digital signal processing (DSP) to signals in a network system.

It applies to individuals with excellent information and communications technology (ICT) and design skills working as field officers. They develop solutions in modern applications, such as internet protocol TV (IPTV), digital TV, fast broadband and internet applications.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Unit Sector

Telecommunications Networks Engineering

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
Elements describe the essential outcomes.	*Performance criteria describe the performance needed to demonstrate achievement of the element.*
1 Apply DSP design criteria to network system	1.1 Review DSP criteria applied to signal processing 1.2 Perform frequency domain analysis on network signals 1.3 Apply digital processing techniques to DSP baseband communications signals used in digital systems 1.4 Generate output of a comb filter in digital filtering application using convolution theorem and autocorrelation
2 Determine linear time invariant (LTI) system properties	2.1 Simulate network entities using simulation software functions 2.2 Perform calculations to find numerical approximations of the continuous-time convolution process 2.3 Simulate echo cancellation by applying simulation software using

ELEMENT	PERFORMANCE CRITERIA
	adaptive DSP algorithms and an inverse filtering method
3 Analyse digital network signals processing	3.1 Analyse the result of digitally passing a signal through a first-order recursive discrete-time filter 3.2 Determine frequency response of a simple continuous-time system using Fourier transform 3.3 Analyse amplitude modulated signals using Fourier transform
4 Analyse time and frequency forms of signals	4.1 Program a simulated software application and represent a comb filter with a signal applied from the required network system 4.2 Produce a report analysing simulated output results and relevance of a DSP filter to a network system

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance but not explicit in the performance criteria.

SKILL	DESCRIPTION
Numeracy	• Performs a range of complex, algorithmic calculations and analyses • Analyses and synthesises highly embedded mathematical information in a broad range of tasks and texts
Reading	• Researches, evaluates and interprets complex technical documentation
Writing	• Prepares workplace documentation including reports that incorporate technical language to communicate complex information clearly and effectively
Planning and organising	• Uses different processes to identify key information and issues, evaluate alternative strategies, anticipate consequences and consider implementation issues and contingencies • Takes responsibility for high-impact decisions in complex situations involving many variables and constraints
Technology	• Uses advanced features and functions of digital tools to complete work tasks

Unit Mapping Information

Supersedes and is equivalent to ICTTEN812 Evaluate and apply digital signal processing to communications system.

Links

Companion Volume Implementation Guide is found on VETNet - https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=a53af4e4-b400-484e-b778-71c9e9d6aff2