



Australian Government

CPPSSI6037 Conduct advanced remote sensing analysis

Release: 1

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Modification History

Release 1 This version first released with CPP Property Services Training Package Release 12.0.

This unit supersedes and is equivalent to CPPSIS6037 Conduct advanced remote sensing analysis.

Application

This unit specifies the skills and knowledge required to conduct advanced remote sensing analysis on digital imagery. It includes using software and image processing systems to perform the required image enhancements, manipulations and analysis. The unit also includes performing supervised and unsupervised classifications on datasets and conducting related error analysis.

This unit is suitable for surveyors and skilled spatial information system (SIS) technicians who use broad theoretical and technical knowledge to analyse information as well as interpret and provide solutions to unpredictable and sometimes complex surveying/spatial information problems. The unit supports those who work in a technical management role in a spatial information services team, in areas such as cartography, town planning and mapping.

All work must be carried out to comply with workplace procedures, in accordance with relevant state/territory regulations that govern surveying work, as well as work health and safety (WHS) legislation and regulations that apply to the workplace.

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

Pre-requisite Unit

Nil.

Unit Sector

Surveying and Spatial Information Services

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe what needs to be done to demonstrate achievement of the element.

1 Plan remote sensing analysis.

1.1 Analyse project specifications and determine appropriate remote sensing analysis methods.

- 1.2 Select suitable image sources according to project specifications.
 - 1.3 Identify suitable images and examine metadata to meet project specifications.
 - 1.4 Obtain image data required to meet project specifications.
 - 1.5 Assess constraints of use of remote sensing data and plan contingencies to meet project requirements.
 - 1.6 Apply legislative and organisational requirements for accessing and using spatial data.
- 2 Analyse image using spectral indices.
 - 2.1 Perform radiometric correction on image, including converting images to reflectance or radiance values to enhance quality of image data.
 - 2.2 Apply spectral indices to image data and interpret results.
- 3 Analyse image using image classification algorithms.
 - 3.1 Apply convolution matrices to enhance quality of image data.
 - 3.2 Determine information classes required according to project specifications.
 - 3.3 Create training samples for required information classes.
 - 3.4 Evaluate training areas and create spectral signature file.
 - 3.5 Apply supervised classification algorithms to signature file.
 - 3.6 Conduct error analysis to calculate approximate accuracy of classification.
 - 3.7 Interpret results according to project specifications.
- 4 Document image analysis.
 - 4.1 Write up the methodology used to compile and analyse image data.
 - 4.2 Write up interpretation of results, noting accuracy and limitations.

- 4.3 Present results in graphical, tabular or map format according to project requirements.

Foundation Skills

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Unit Mapping Information

Supersedes and is equivalent to CPPSIS6037 Conduct advanced remote sensing analysis.

Links

Companion volumes to this training package are available at the VETNet website - <https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=6f3f9672-30e8-4835-b348-205dfcf13d9b>

Assessment Requirements for CPPSSI6037 Conduct advanced remote sensing analysis

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Performance Evidence

To demonstrate competency a candidate must meet the elements and performance criteria of this unit by using a computer and remote sensing software system to conduct and report an advanced remote sensing analysis for two different projects:

- one project must analyse remote sensing data using spectral indices to transform the image to identify landscape patterns or features.
- one project must focus on performing classifications on datasets using supervised and unsupervised classification algorithms and training samples.

Knowledge Evidence

To be competent in this unit a candidate must demonstrate knowledge of:

- metadata relating to remote sensing data
- characteristics of multispectral imagery, including:
 - spatial resolution
 - spectral resolution
 - radiometric resolution
 - temporal resolution
- spectral response patterns of common landcovers
- geometric and radiometric corrections applied to multispectral imagery
- functions and statistics available in image processing systems:
 - band selections
 - contrast stretches
 - histogram plots
 - univariate and multivariate statistics
- remote sensing indices:
 - vegetation indices
 - water indices

- burn indices
- industry-accepted techniques for applying supervised and unsupervised classification algorithms to remote sensing data
- legislative requirements for data privacy, intellectual property and licensing when using remotely sensed data
- digital image data formats
- sources of spatial datasets
- image enhancement and processing techniques, including convolution matrices
- methods for validating spatial data sources and constraints on use
- key features of coordinate reference systems.

Assessment Conditions

Assessors must meet the requirements for assessors contained in the Standards for Registered Training Organisations.

Competency is to be assessed in the workplace or a simulated environment that accurately reflects performance in a real workplace setting where these skills and knowledge would be performed.

Candidates must have access to:

- computer and software appropriate for conducting remote sensing manipulation and analysis.

Links

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