

ArcView (software package)
.IDRISI
(raster form)
(vector form)
(automatic)

*Build Spatial Database by developing working environment to
achieve Automatic Raster-to-Vector Conversion operation of
The Remote Sensing Data*

Abstract

In this paper a develop an working environment for building spatial database by utilizing ArcView Geographic Information System software package and IDRISI software package for remotely sensed images processing is obtained. Through working environment remotely sensed images representation transformed from raster form to vector form. Programming environment of the ArcView and IDRISI software packages utilized to achieve spatial database building from remotely sensed images automatically. The results of the proposed working environment show efficiency in building spatial database in accurate and quick manner. Thus, these spatial database can be used in Geographic Information System applications.

[] .
(Geographic Information System)

(GIS)
(Remote Sensing)
(Global Positioning System GPS)
(GIS) .(Topographic maps)

(image acquisition)

[] .
(Integration)
(earth resources)
(environmental studies)

(soil erosion) (land use dynamics)
.[] (mountain watershed)
.[2] (land condition)

(land use)

[] (land cover)

(raster form)

(vector form)

(GIS)

(GIS\RS integration)

.[3] (raster and vector)

. [10]

(integration)

(data structures)

(compatibility)

(databases)

(GIS\RS integration)

(digital image processing)

(computer graphic)

(coding)

.(raster-to-vector conversion)

(satellite image)

(features)

(polygons)

(curves)

(lines)

(sequenced points)

.(feature)

(data sources)

(computer science)

(vector data)

(topological operations)

(feature)

(Thematic Maps)

(polygons)

(features)

(vectors)

(automatic raster-to-vector conversion system)

(vectorization)

(topographic maps)

[1]

-

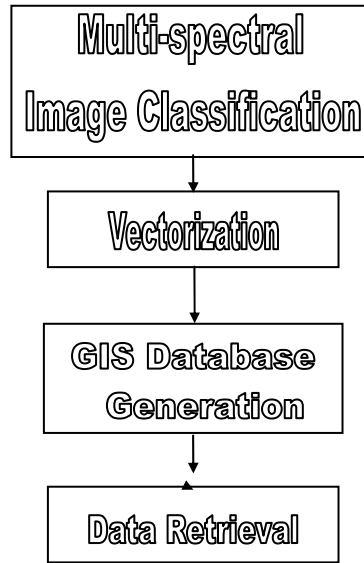
[9] [15] .
[11] .
(automated operations) (detailed review)
(raster maps) (pre-processing)
(contour lines) [16]
(engineering drawing primitives) .
(circles) (lines)

-

(vectorization systems)
(general structure)
(digitization)
(image segmentation)
(features borders)
(land cover types)
(polygon)
(line thinning)
(raster-to-vector conversion)

() .

:



شكل (١) خطوات تصميم بيئة العمل

Image Classification

(digital classification)

(pixels)

. [17] (classes)

(multi-spectral image)

. [7] (feature space thresholding)

(image segmentation)

(quantitative information)

(spectral values)

(feature space)

(coordinates)

(feature space)

. (thematic maps)

(land cover)

(land uses)

(geology)

(oceanography)

(atmosphere)

(Maximum Likelihood)

(classes)

(covariance matrix)

(mean vectot)

(Maximum Likelihood)

(Bayes function)

: [5]

$$d_i(\mathbf{x}) = \ln P(W_i) - 0.5 \ln |C_i| - 0.5 [(\mathbf{x} - \mathbf{z}_i)' C_i^{-1} (\mathbf{x} - \mathbf{z}_i)] \dots \dots \dots (1)$$

$i = 1, 2, \dots, M$

M

$P(W_i)$

C_i

$|C_i|$

\mathbf{x}

\mathbf{z}_i

(coordinate system)

(spatial reference systems)

()

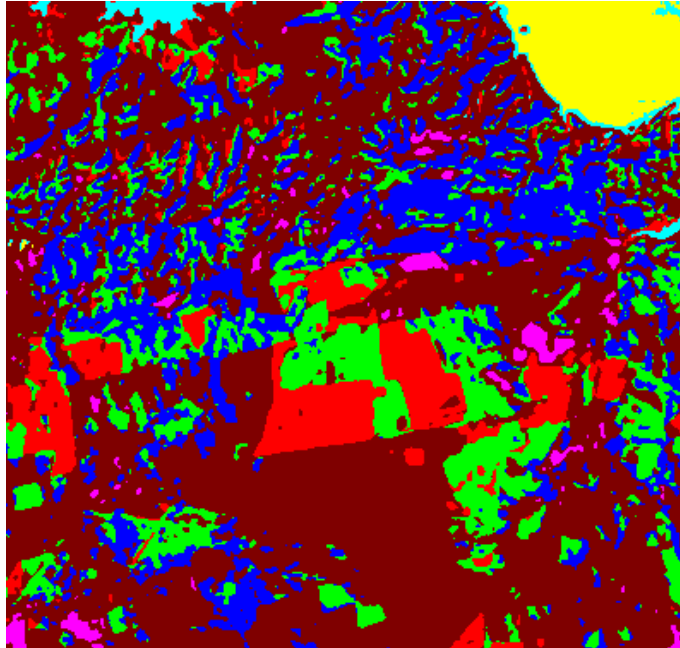
(acquired)

(Thematic Mapper sensor)

(spectral bands)

: (thermal infrared band 6)

(1,2,3,4,5,7)



()

(image segmentation)

, (disjoint regions)

(feature)

(pixels)

(homogeneous)

. [13]

(pattern recognition)

(digital image processing)

. (image vectorization)

(methods)

(criteria)

(texture)

(color)

(grey level)

(shapes)

(objects)

(features)

(points)

(lines)

(polygons)

] 1

(feature space thresholding)

(feature)

(image band)

(polygons)

(vector representation)

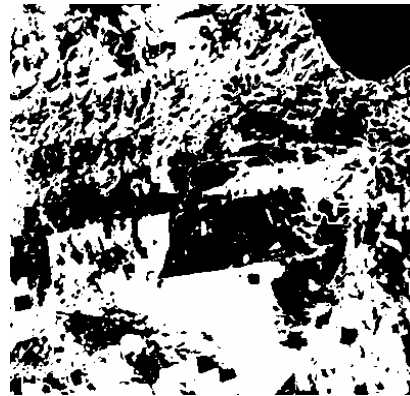
()

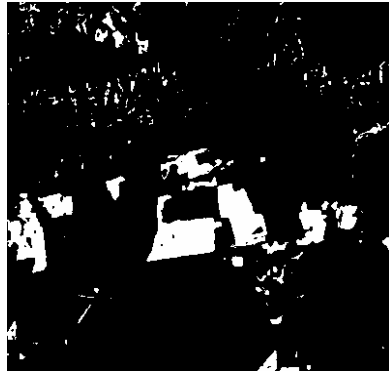
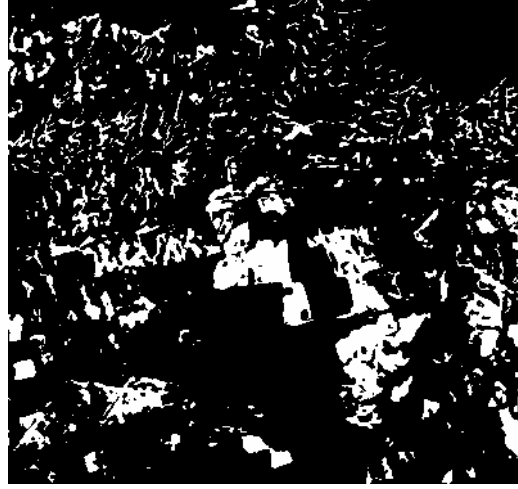
()

(image segmentation)

(land cover types)

(layers)





()

Vectorization - -

(modes)

(user)

(GIS toolbars)

(functions)

(interactive mode)

(semi-automatic mode) -

(automatic)

(line tracing)

(interactively)

(line intersection)

(automatic mode) -

(software)

(automatic)

(vectorization)

(standard method)

(feature shape)

(raster form)

(vector form)

(functions)

(automatic)

(IDRISI)

GIS database generation -

(vectorized database)

(integrate)

(tables) (GPS)

(distances) (areas)

(database structure)

(features)

(thematic maps)

(land cover types)

ArcView (polygons)

ArcView

AVENUE

(spatial database)

:

- Topological data structure
- Non- Topological data structure

shape files

(attributes)

spatial database retrieval -

AVENUE

ArcView (software package)

(options) (functions) (organizational structure)

(project)

(software applications)

. ArcView

. ArcView (working environment)
 (views, tables, charts, layouts, scripts)
 ArcView
 .(object oriented programming)
 project ArcView
 (retrieved)
 (component) .
 (spatial data) (view)
 (script) . ArcView
 AVENUE
 (automate) ArcView
 .
 : project ArcView
 open new project -
 view -
 layers themes CreatePolygons -
 view themes AddPolygons -
 save and close project -
 , (layers)
 , (polygons) (data structure)
 theme .ArcView themes
 (relationships)
 (attribute data)

(automated)

(visual basic)

()

(land covers)

(binary image)

()

(image segmentation)

(layers)

(raster)

()

(IDRISI)

(IDRISI)

(automated)

(macro language)

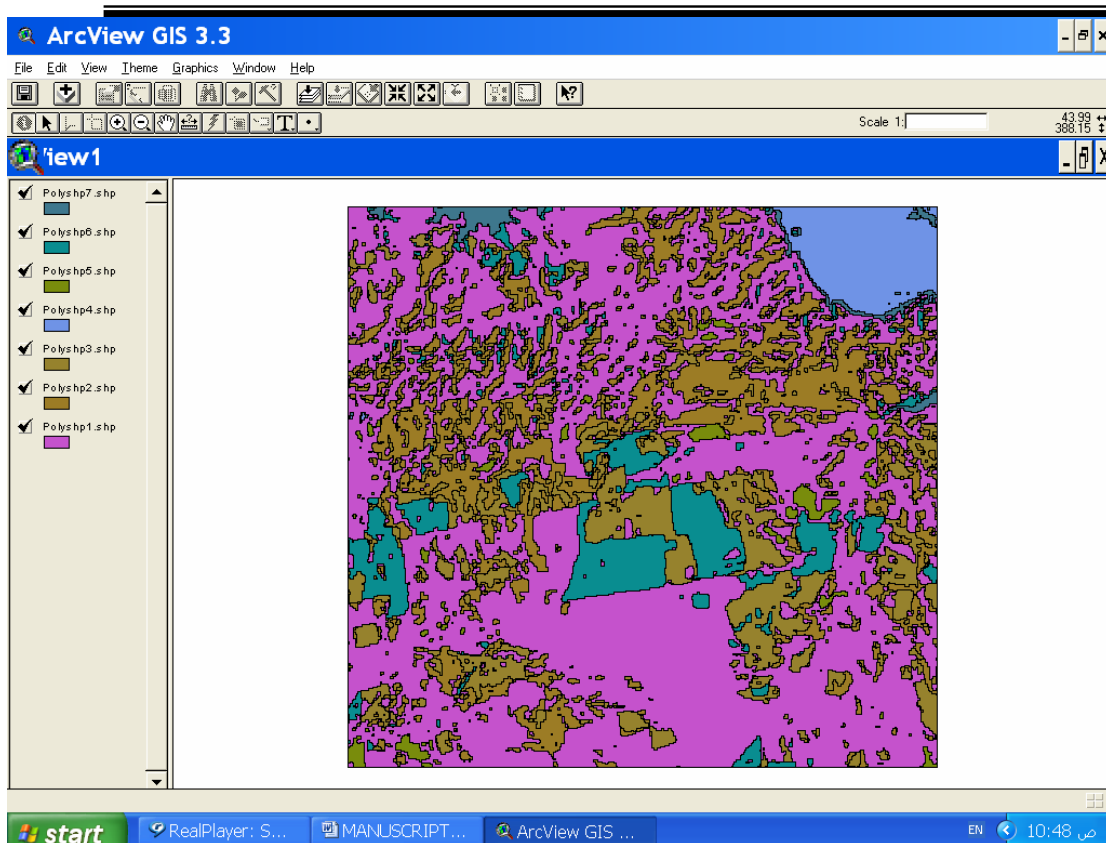
(AVENUE)

ArcView

()

ArcView

(themes) (layers)



()

ArcView

(layers or themes)

(facilities)

(single theme)

()

. (geo-processing extension)

ArcView

(theme)

(polygons)

ArcView

(options)

(theme) .

.(summarize option)

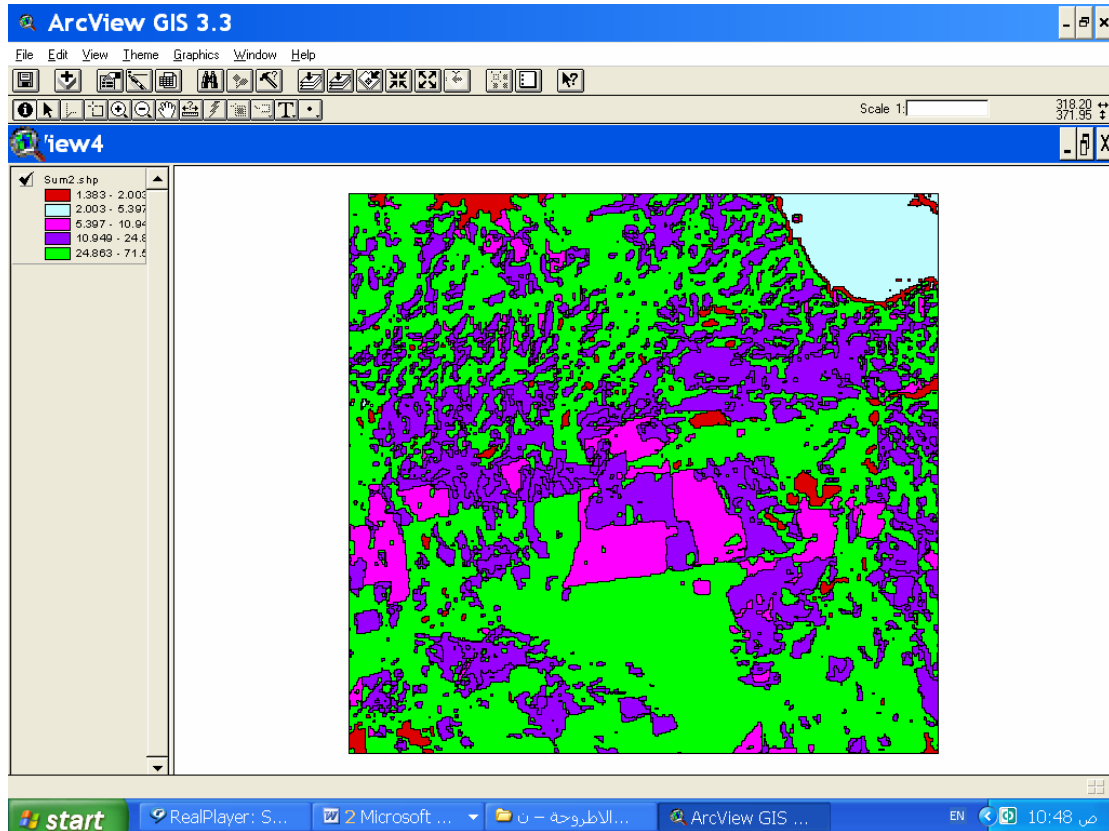
.(themes)

(analysis)

. ArcView

(classify) ArcView

: () (theme)



()

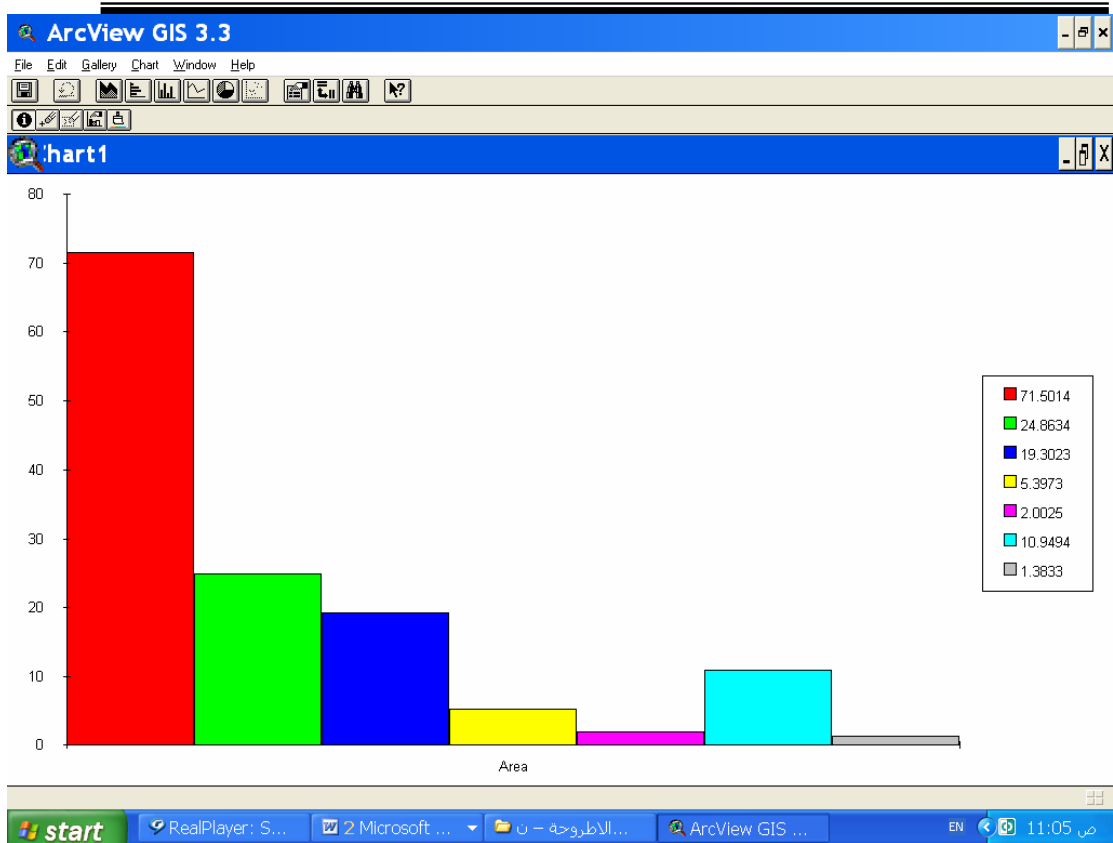
ArcView

(bar charts)

(statistics)

: ()

(theme)



()

(theme)

(vector form)

(raster form)

() ()

(automated)

IDRISI

ArcView

(programming environment)

ArcView

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