MINISTÉRIO DA CIÊNCIA E TECNOLOGIA
INSTITUTO NACIONAL DE PESQUISAS ESPACIAIS

FUNDO AMAZÔNIA

GeoDMA – Geographic Data Mining Analyst

Thales Sehn Körting
Leila Maria Garcia Fonseca
Emiliano Ferreira Castejon
Raian Vargas Maretto

Workshop MSA Monitoramento Ambiental por Satélite no Bioma Amazônia
13 e 14 de agosto de 2018, São José dos Campos - SP

MINISTÉRIO DA CIÊNCIA E TECNOLOGIA
INSTITUTO NACIONAL DE PESQUISAS ESPACIAIS

INPE-14429-TDI/1130

MINERAÇÃO DE PADRÕES DE MUDANÇA EM IMAGENS DE SENSORIAMENTO REMOTO

Marcelino Pereira dos Santos Silva

Tese de Doutorado do Curso de Pós-Graduação em Computação Aplicada, orientada pelo Dr. Gilberto Câmara, aprovada em 3 de fevereiro de 2006.

INPE
São José dos Campos
2006

Ministério da
Ciência, Tecnologia
e Inovação

GOVERNO FEDERAL
BRASIL
PAÍS RICO É PAÍS SEM POBREZA

sid.inpe.br/mtc-m19/2012/07.31.18.22-TDI

GEODMA: A TOOLBOX INTEGRATING DATA MINING WITH OBJECT-BASED AND MULTI-TEMPORAL ANALYSIS OF SATELLITE REMOTELY SENSED IMAGERY

Thales Sehn Korting

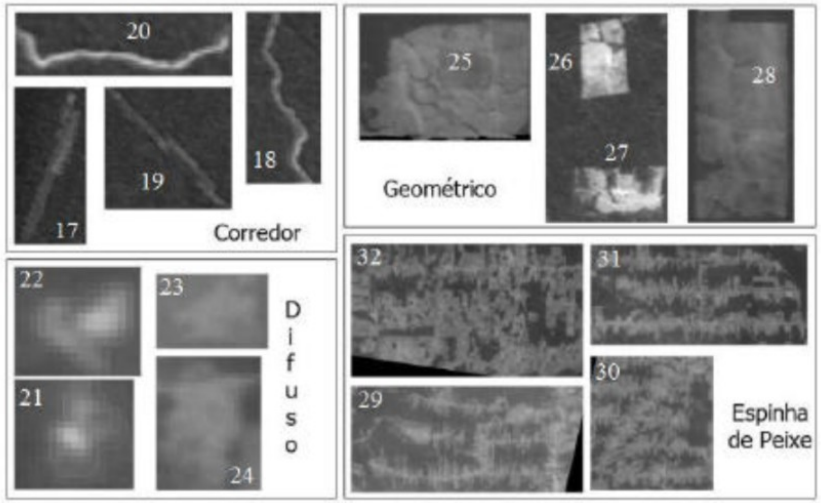
Doctorate Thesis at Post Graduation Couse applied in Remote Sensing, advised by Drs. Leila Maria Garcia Fonseca, and Gilberto Câmara, approved in August 20, 2012

URL of the original document:
<http://urlib.net/8JMKD3MGP7W/3CCH86S>

INPE
São José dos Campos
2012

MINISTÉRIO DA CIÊNCIA E TECNOLOGIA
INSTITUTO NACIONAL DE PESQUISAS ESPACIAIS

INPE-14429-TDI/1130



Tese de Doutorado do Curso de Pós-Graduação em Computação Aplicada, orientada pelo Dr. Gilberto Câmara, aprovada em 3 de fevereiro de 2006.

INPE
São José dos Campos
2006

Ministério da Ciência, Tecnologia e Inovação
GOVERNO FEDERAL BRASIL PAÍS RICO É PAÍS SEM POBREZA

sid.inpe.br/mtc-m19/2012/07.31.18.22-TDI

GEODMA: A TOOLBOX INTEGRATING DATA MINING WITH OBJECT-BASED AND MULTI-TEMPORAL ANALYSIS OF SATELLITE REMOTELY SENSED IMAGERY

Thales Sehn Korting

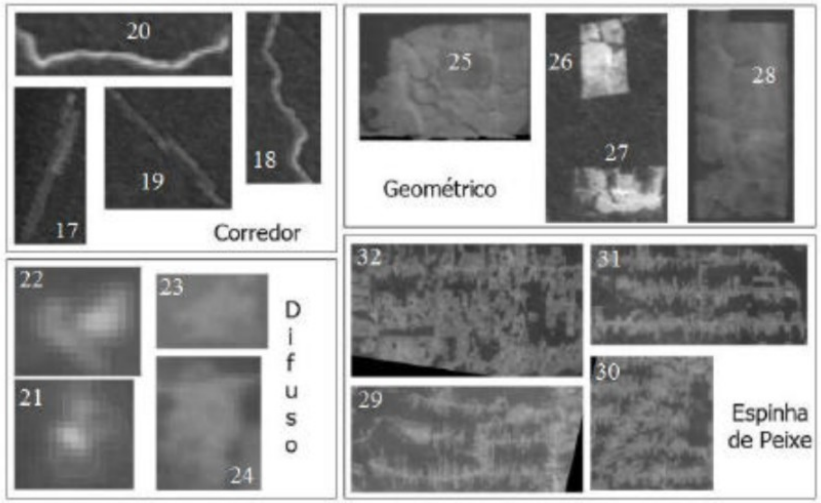
Doctorate Thesis at Post Graduation Couse applied in Remote Sensing, advised by Drs. Leila Maria Garcia Fonseca, and Gilberto Câmara, approved in August 20, 2012

URL of the original document:
<http://urlib.net/8JMKD3MGP7W/3CCH86S>

INPE
São José dos Campos
2012

MINISTÉRIO DA CIÊNCIA E TECNOLOGIA
INSTITUTO NACIONAL DE PESQUISAS ESPACIAIS

INPE-14429-TDI/1130

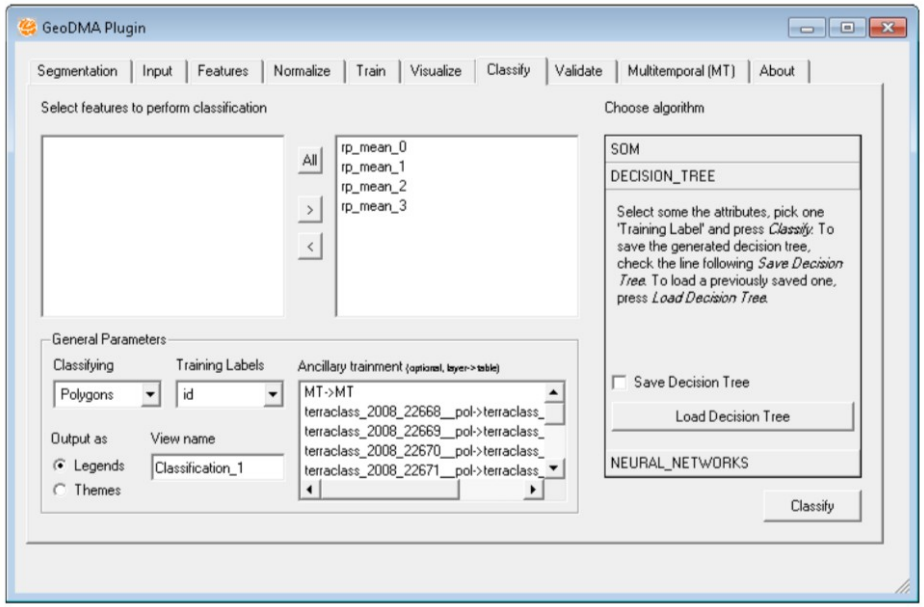


Tese de Doutorado do Curso de Pós-Graduação em Computação Aplicada, orientada pelo Dr. Gilberto Câmara, aprovada em 3 de fevereiro de 2006.

INPE
São José dos Campos
2006

Ministério da Ciência, Tecnologia e Inovação
GOVERNO FEDERAL BRASIL PAÍS RICO É PAÍS SEM POBREZA

sid.inpe.br/mtc-m19/2012/07.31.18.22-TDI



URL of the original document:
<http://urlib.net/8JMKD3MGP7W/3CCH86S>

INPE
São José dos Campos
2012

GeoDMA - Geographic Data Mining Analyst

GeoDMA is a toolbox for integrating remote sensing imagery analysis methods with data mining techniques producing a user-centered, extensible, rich computational environment for information extraction and knowledge discovery over large geographic databases.

Table of Contents

Downloads

Edit

Release	TerraView Version	Date	Download link	Release Notes
Releases compatible to TerraLib 5 → *watch 30sec video (below) to learn how to install GeoDMA 2.0.0*				
GeoDMA 2.0.0 alpha 3	5.3.1	May, 7, 2018	geodma-2.0.0-alpha3-setup.exe	This is an alpha version, compatible to the original TerraView

http://www.dpi.inpe.br/geodma/

Usuários GeoDMA


MINISTÉRIO DA CIÊNCIA E TECNOLOGIA
INSTITUTO NACIONAL DE PESQUISAS ESPACIAIS
FUNDO AMAZÔNIA
GeoDMA
TerraView
Terra Amazon
Qt
TerraLib
boost
C++ LIBRARIES
CGAL
python™

MINISTÉRIO DA CIÊNCIA E TECNOLOGIA
INSTITUTO NACIONAL DE PESQUISAS ESPACIAIS

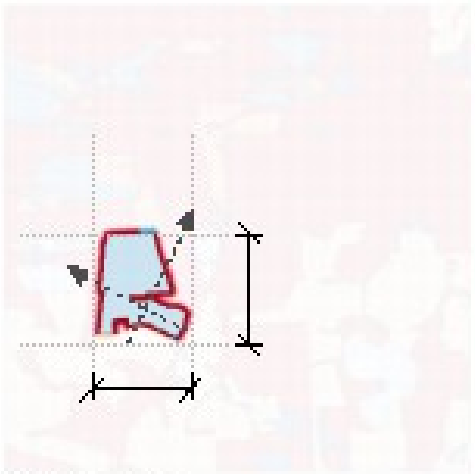
FUNDO AMAZÔNIA

Cálculo de Atributos

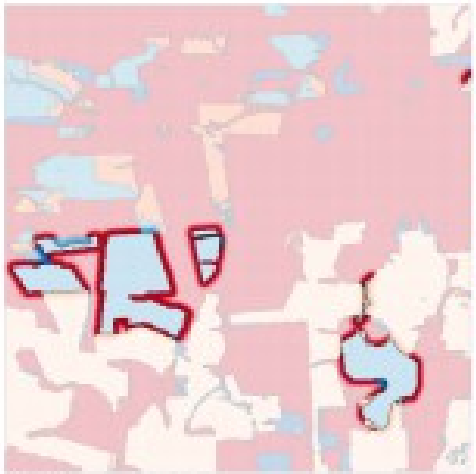
Seleção de Amostras

Classificação de Padrões

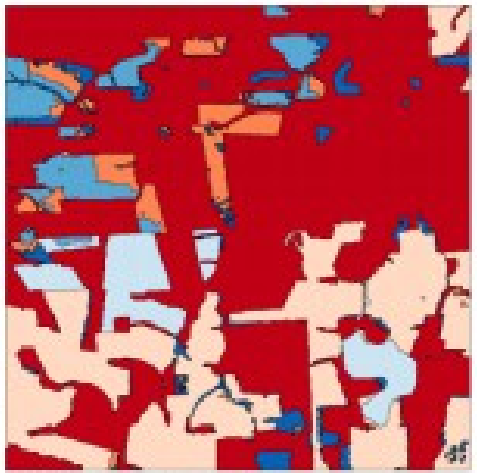
Cálculo de Atributos



Objeto



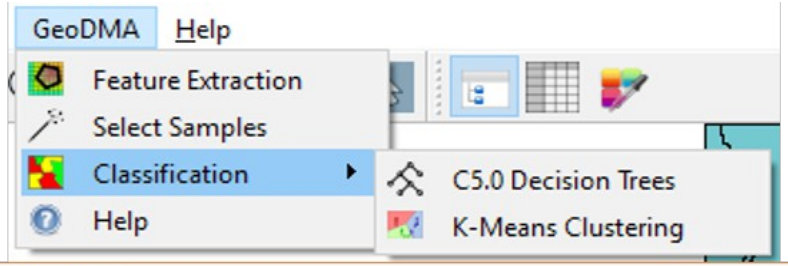
Classe

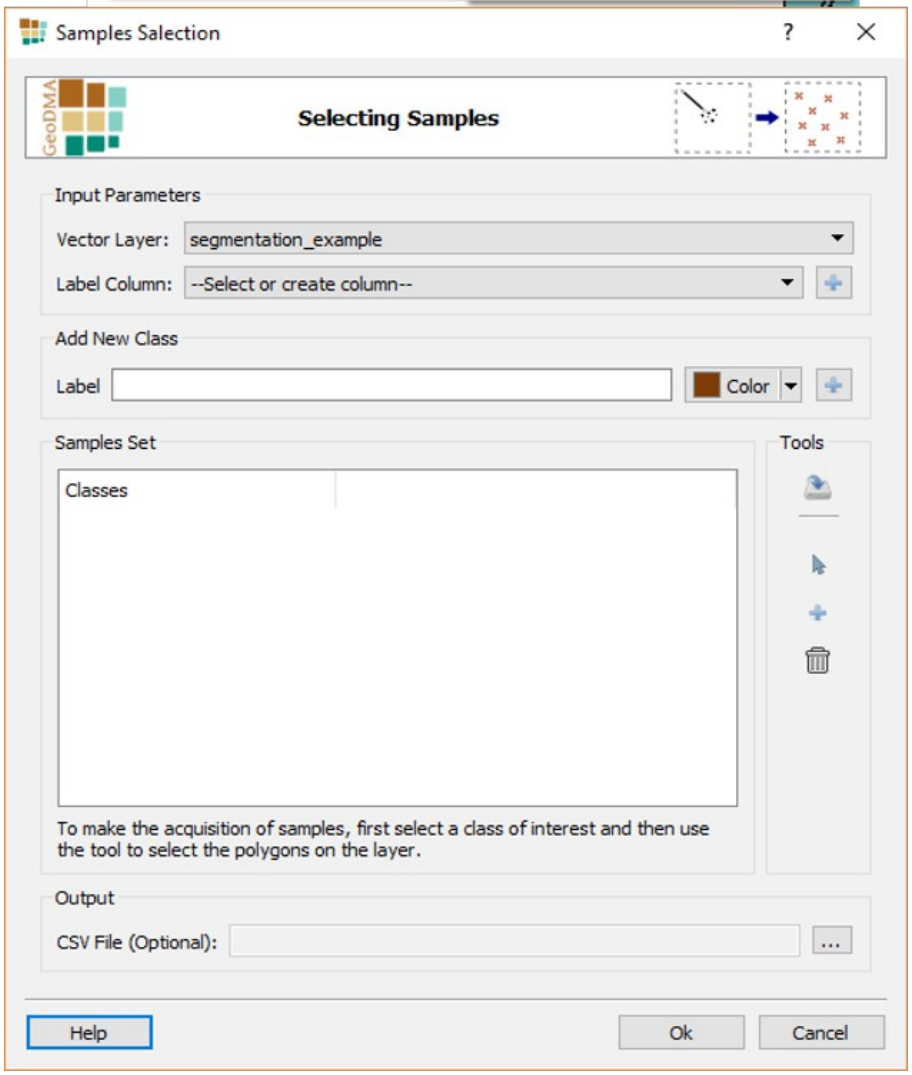


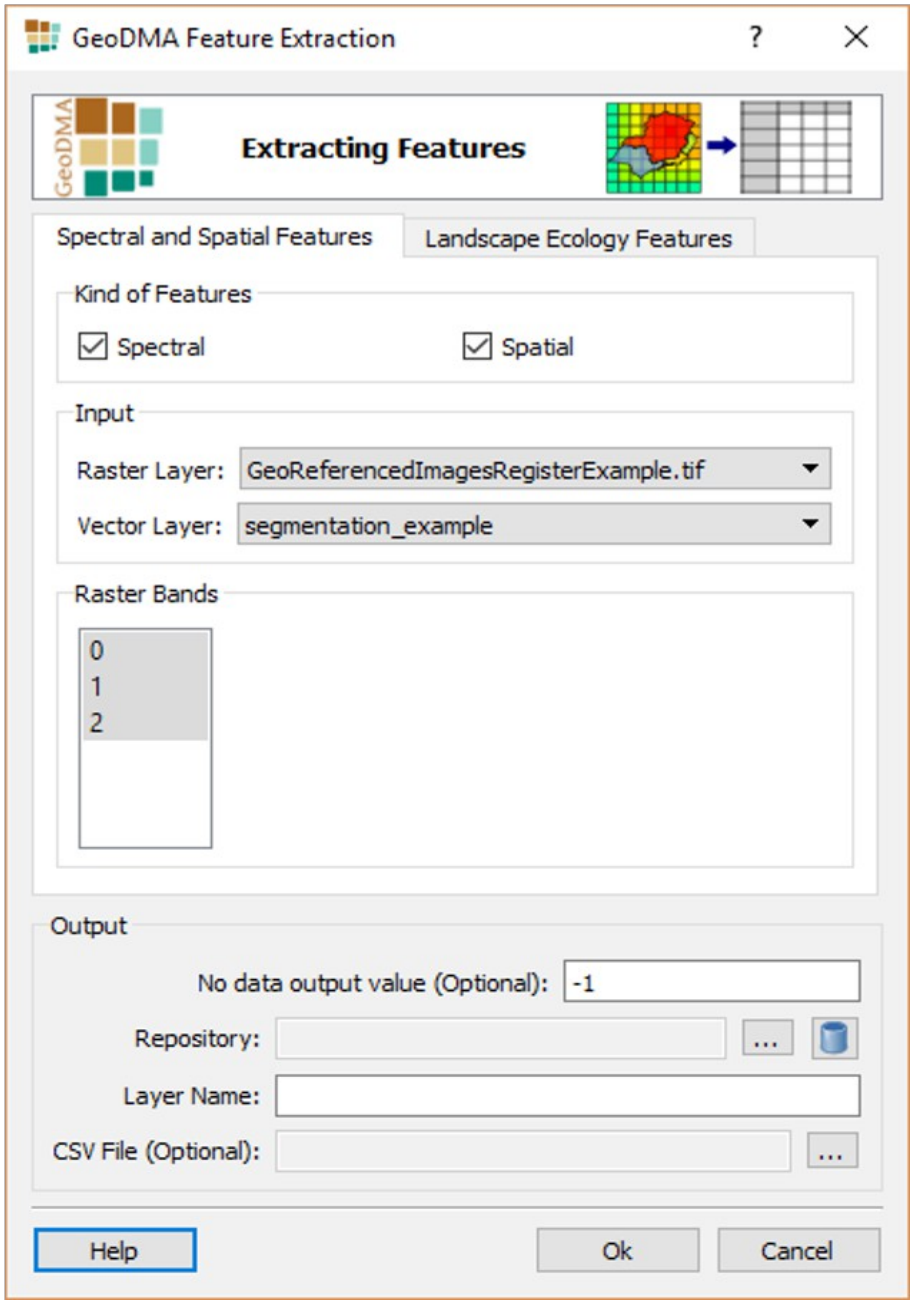
Paisagem

Name	Description	Formula	Range	Units
AMPLITUDE_BAND	Defines the amplitude of the pixels inside the object. The amplitude means the maximum pixel value minus the minimum pixel value.	$amp = px_{max} - px_{min}$	≥ 0	px
BAND_RATIO_BAND	Describes the contribution of the given band to the region.	$bandRatio = \frac{\mu_{B_i}}{\sum_{j=1}^{NB} \mu_{B_j}}$	≥ 0	px
COUNT_BAND	Defines the total number of pixels inside the object, including pixels with dummy values.	$N_{tot} = count(X)$	≥ 0	N
CONTRAST_SE_BAND	Returns a measure of the intensity contrast between a pixel and its southeast neighbor over the object. Contrast is 0 for a constant object. It is also known as *Sum of Squares Variance*	$Contrast = \sum_{i=0}^{D-1} \sum_{j=0}^{D-1} p_{i,j} . \lvert i-j \rvert^2$	$[0, (size(GLCM, 1) - 1)^2]$	-
DISSIMILARITY_SE_BAND	Measures how different the elements of the GLCM are from each other and it is high when the local region has a high contrast.	$dissimilarity = \sum_{i=0}^{D-1} \sum_{j=0}^{D-1} p_{i,j} \lvert i-j \rvert$	≥ 0	-
ENERGY_SE_BAND	It returns the squared root of Angular Second Moment, computed by the sum of the squared elements in GLCM. Energy is 1 for a constant image.	$energy = \sum_{i=0}^{D-1} \sum j = 0^{D-1} p_{i,j}^2$	$[0, 1]$	-

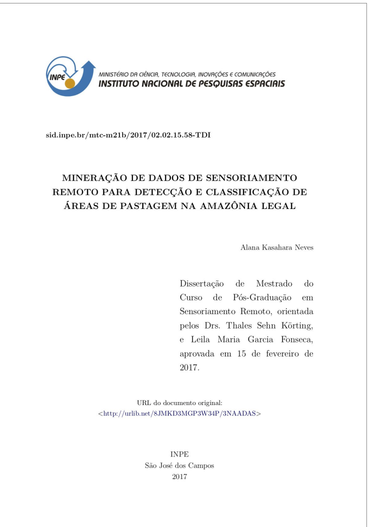
Name	Description	Formula	Range	Units
c_CA	Class Area means the sum of areas of a given class inside a cell.	$CA = \sum_{j=1}^{n} a_j$	≥ 0	ha
c_PERCENTLAND	$\%Land$ equals the sum of the areas (m^2) of all patches of the corresponding patch type (class), divided by total landscape area (m^2). $\%Land$ is equals to the percentage the landscape comprised of the corresponding patch type (class).	$PLAND = \frac{\sum_{j=1}^{n} a_j}{A} \times 100$	$[0, 100]$	%
c_PD	PD stands for Patch Density, which is equals the number of patches in the landscape, divided by total landscape area (m^2), multiplied by 10,000 and 100 (to convert to 100 hectares). Note, PD does not include background patches or patches in the landscape border, if present. However, total landscape area (A) includes any internal background present.	$PD = \frac{n}{A} \times 10000 \times 100$	≥ 0	Number/100ha
c_MPS	MPS stands for Mean Patch Size, which is equals to the sum of the areas (m^2) of all patches of the corresponding patch type, divided by the number of patches of the same type.	$MPS = \frac{\sum_{j=1}^{n} a_j}{n} 10^{-4}$	≥ 0	ha
c_PSSD	PSSD stands for Patch Size Standard Deviation, which is the root mean squared error (deviation from the mean) in patch size. This is the population standard deviation, not the sample standard deviation.	$PSSD = \sqrt{\frac{\sum_{j=1}^{n} (a_j - MPS)^2}{n}} 10^{-4}$	≥ 0	ha


GeoDMA
Help
Feature Extraction
Select Samples
Classification
Help
C5.0 Decision Trees
K-Means Clustering


Samples Selection
GeoDMA
Selecting Samples
Input Parameters
Vector Layer: segmentation_example
Label Column: --Select or create column--
Add New Class
Label
Color
Samples Set
Classes
Tools
To make the acquisition of samples, first select a class of interest and then use the tool to select the polygons on the layer.
Output
CSV File (Optional):
Help
Ok
Cancel


GeoDMA Feature Extraction
GeoDMA
Extracting Features
Spectral and Spatial Features
Landscape Ecology Features
Kind of Features
Spectral
Spatial
Input
Raster Layer: GeoReferencedImagesRegisterExample.tif
Vector Layer: segmentation_example
Raster Bands
0
1
2
Output
No data output value (Optional): -1
Repository:
Layer Name:
CSV File (Optional):
Help
Ok
Cancel

Publicações


sid.inpe.br/mtc-m21b/2017/02.02.15.58-TDI

MINERAÇÃO DE DADOS DE SENSORIAMENTO REMOTO PARA DETECÇÃO E CLASSIFICAÇÃO DE ÁREAS DE PASTAGEM NA AMAZÔNIA LEGAL

Alana Kasahara Neves

Dissertação de Mestrado do Curso de Pós-Graduação em Sensoriamento Remoto, orientada pelos Drs. Thales Sehn Körting, e Leila Maria Garcia Fonseca, aprovada em 15 de fevereiro de 2017.

INPE
São José dos Campos
2017


FIRST EXPERIMENTS USING THE IMAGE FORESTING TRANSFORM (IFT) ALGORITHM FOR SEGMENTATION OF REMOTE SENSING IMAGERY

A. R. Soares, T. S. Körting, L. M. G. Fonseca


Remote sensing image processing to identify spatial units of human occupation along Trans-Amazonian Highway (BR-230), Brazil

João Arthur Pompeu Pavanelli, Bruna Virginia Neves, Vanessa Priscila Camphora, Thales Sehn Körting

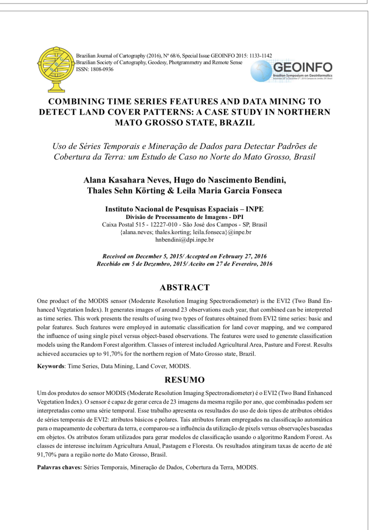

TRENDS IN GEOINFORMATICS

Tendências em GeoInformática

Thales Sehn Körting, Karine Reis Ferreira, Lúbia Vinhas, Antônio Miguel Vieira Monteiro & Gilberto Ribeiro de Queiroz


IMAGE SEGMENTATION ALGORITHMS COMPARISON

Mariane Souza Reis, Maria Antônia Falcão de Oliveira, Thales Sehn Körting, Eliana Pantaleão, Sidnei João Siqueira Sant'Anna, Luciano Vieira Dutra, Dengsheng Lu

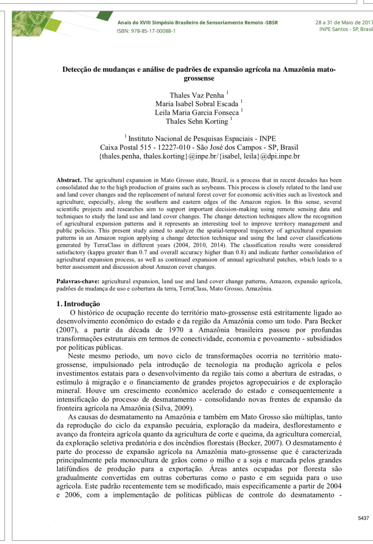

COMBINING TIME SERIES FEATURES AND DATA MINING TO DETECT LAND COVER PATTERNS: A CASE STUDY IN NORTHERN MATO GROSSO STATE, BRAZIL

Uso de Séries Temporais e Mineração de Dados para Detectar Padrões de Cobertura da Terra: um Estudo de Caso no Norte do Mato Grosso, Brasil

Alana Kasahara Neves, Hugo do Nascimento Bendini, Thales Sehn Körting & Leila Maria Garcia Fonseca


Data mining applied to temporal dynamics of deforestation pattern: a study case in Southern Amazon forest, Brazil

Mikhaela A. J. S. Pletsch, Thales Sehn Körting, Maria I. S. Escada, Sacha M. O. Siani

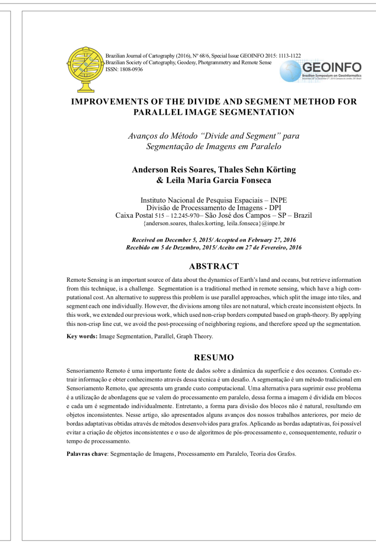

Detecção de mudanças e análise de padrões de expansão agrícola na Amazônia mato-grossense

Thales Vaz Penha, Maria Isabel Sobral Escada, Leila Maria Garcia Fonseca, Thales Sehn Korting


WATER BODY EXTRACTION FROM RAPIDEYE IMAGES: AN AUTOMATED METHODOLOGY BASED ON HUE COMPONENT OF COLOR TRANSFORMATION FROM RGB TO HSV MODEL

Extração de Corpos d'Água Utilizando Imagens RapidEye: Metodologia Automatizada com Base no Componente Matiz da Transformação de Cores RGB para o Modelo HSV

Laércio Massaru Namikawa, Thales Sehn Körting & Emiliano Ferreira Castejon


IMPROVEMENTS OF THE DIVIDE AND SEGMENT METHOD FOR PARALLEL IMAGE SEGMENTATION

Avanços do Método "Divide and Segment" para Segmentação de Imagens em Paralelo

Anderson Reis Soares, Thales Sehn Körting & Leila Maria Garcia Fonseca

GeoDMA – Geographic Data Mining Analyst

Thales Sehn Körting
Leila Maria Garcia Fonseca
Emiliano Ferreira Castejon
Raian Vargas Maretto

BNDES

MINISTÉRIO DO PLANEJAMENTO, DESENVOLVIMENTO E GESTÃO

MINISTÉRIO DO MEIO AMBIENTE

BRASIL GOVERNO FEDERAL

FUNCATE
Fundação de Ciência, Aplicações e Tecnologia Espaciais

Seminário MSA - Monitoramento Ambiental por Satélite no Bioma Amazônia.
13 e 14 de agosto de 2018, São José dos Campos - SP