Publications:

3D geomarketing segmentation: A higher spatial dimension planning perspective
Publication: Research - peer-review › Article in proceedings – Annual report year: 2016

3D Indoor Building Environment Reconstruction using Polynomial Kernel, Least Square Adjustment, Interval Analysis and Homotopy Continuation
Publication: Research - peer-review › Article in proceedings – Annual report year: 2016

3D Nearest Neighbour Search Using a Clustered Hierarchical Tree Structure
Publication: Research - peer-review › Conference article – Annual report year: 2016

Automated Photogrammetric Image Matching with Sift Algorithm and Delaunay Triangulation
Publication: Research - peer-review › Conference article – Annual report year: 2016

Classified and Clustered Data Constellation: An Efficient Approach of 3D Urban Data Management
Publication: Research - peer-review › Journal article – Annual report year: 2016

Geospatial Big Data Handling Theory and Methods: A Review and Research Challenges
Publication: Research - peer-review › Journal article – Annual report year: 2015

Improving Nearest Neighbour Search in 3D Spatial Access Method
Publication: Research - peer-review › Article in proceedings – Annual report year: 2017

Multidimensional Big Spatial Data Modeling Through A Case Study: Lte Rf Subsystem Power Consumption Modeling
Publication: Research - peer-review › Journal article – Annual report year: 2016

Theme section: Multi-dimensional modelling, analysis and visualization
Publication: Research - peer-review › Editorial – Annual report year: 2016

3D Crisp Clustering of Geo-Urban Data
Publication: Communication › Encyclopedia chapter – Annual report year: 2016

3D Indoor Building Environment Reconstruction using calibration of Range finder Data
Publication: Research - peer-review › Conference article – Annual report year: 2015

3D Partition-Based Clustering for Supply Chain Data Management
Publication: Research - peer-review › Conference article – Annual report year: 2015

An amalgamation of 3D city models in urban air quality modelling for improving visual impact analysis
Publication: Research - peer-review › Article in proceedings – Annual report year: 2015

Crisp Clustering Algorithm for 3D Geospatial Vector Data Quantization
Publication: Research - peer-review › Book chapter – Annual report year: 2015

Invariants of the Dirichlet/Voronoi Tilings of Hyperspheres in R^n and their Dual Delone/Delaunay Graphs
Publication: Research - peer-review › Conference article – Annual report year: 2015
Methods, Devices and Computer Program Products Providing for Establishing a Model for Emulating a Physical Quantity Which Depends on at Least One Input Parameter, and Use Thereof
Publication: Research › Patent – Annual report year: 2015

3D Hilbert Space Filling Curves in 3D City Modeling for Faster Spatial Queries
Publication: Research - peer-review › Journal article – Annual report year: 2015

An overview of the applications for early warning and mapping of the flood events in New Brunswick
Publication: Research - peer-review › Article in proceedings – Annual report year: 2015

Comparative Analysis of Photogrammetric Methods for 3D Models for Museums
Publication: Research - peer-review › Article in proceedings – Annual report year: 2014

Geoinformation for Informed Decisions
Publication: Research - peer-review › Book – Annual report year: 2014

Spatial access method for urban geospatial database management: An efficient approach of 3D vector data clustering technique
Publication: Research - peer-review › Article in proceedings – Annual report year: 2014

The Dual Half-Arc data structure: towards the universal B-rep data structure
Publication: Research - peer-review › Journal article – Annual report year: 2014

Trimble LaserAce 1000 Accuracy Evaluation for Indoor Data Acquisition
Publication: Research - peer-review › Article in proceedings – Annual report year: 2014

Child cancer follow-up ontology and information system
Publication: Research - peer-review › Article in proceedings – Annual report year: 2013

Exact Computation of the Topology and Geometric Invariants of the Voronoi Diagram of Spheres in 3D
Publication: Research - peer-review › Journal article – Annual report year: 2013

Improving 3D spatial queries search: newfangled technique of space filling curves in 3D city modeling
Publication: Research - peer-review › Article in proceedings – Annual report year: 2013

Invariants of the dirichlet/voronoi tilings of hyperspheres in $\mathbb{R}^N$ and their dual delone/delaunay graphs
Publication: Research - peer-review › Paper – Annual report year: 2013

Proceedings of the International Symposium & Exhibition on Geoinformation ISG 2013
Publication: Research - peer-review › Book – Annual report year: 2013

Review of Spatial Indexing Techniques for Large Urban Data Management
Publication: Research - peer-review › Paper – Annual report year: 2013

RF subsystem power consumption and induced radiation emulation
Publication: Research › Ph.D. thesis – Annual report year: 2014

Spatio-temporal map generalizations with the hierarchical Voronoi data structure
Publication: Research - peer-review › Paper – Annual report year: 2013
Unified Data Model of Urban Air Pollution Dispersion and 3D Spatial City Models: Groundwork Assessment towards Sustainable Urban Development for Malaysia
Publication: Research - peer-review › Journal article – Annual report year: 2013

Flood Progression Modelling and Impact Analysis
Publication: Research - peer-review › Book chapter – Annual report year: 2012

Publication: Research - peer-review › Book – Annual report year: 2012

Level Sets and Voronoi based Feature Extraction from any Imagery
Publication: Research - peer-review › Article in proceedings – Annual report year: 2012

LTE modem power consumption, SAR and RF signal strength emulation
Publication: Research - peer-review › Article in proceedings – Annual report year: 2012

LTE RF subsystem power consumption modeling
Publication: Research - peer-review › Article in proceedings – Annual report year: 2012

Map Updates in a Dynamic Voronoi Data Structure
Publication: Research - peer-review › Book chapter – Annual report year: 2012

Non-Spatial and Geospatial Semantic Query of Health Information
Publication: Research - peer-review › Conference article – Annual report year: 2012

Risk maps for evaluation of natural and man-made hazards
Publication: Research - peer-review › Book chapter – Annual report year: 2012

Towards introducing a geocoding information system for Greenland
Publication: Research › Sound/Visual production (digital) – Annual report year: 2012

Visualization of the Impact of the Catastrophic Flooding Events
Publication: Research - peer-review › Paper – Annual report year: 2012

AMS Mathematical review of the paper "Everett, Hazel; Lazard, Daniel (F-PARIS6-IP6); Lazard, Sylvain; Safey El Din, Mohab (F-PARIS6-IP6) The Voronoi diagram of three lines. (English summary) Discrete Comput. Geom. 42 (2009), no. 1, 94–130."
Publication: Research - peer-review › Review – Annual report year: 2010

Cut Locus Construction using Deformable Simplicial Complexes
Publication: Research - peer-review › Article in proceedings – Annual report year: 2011

Development and challenges of using web-based GIS for health applications
Publication: Research - peer-review › Book chapter – Annual report year: 2011

Exact computation of the Voronoi Diagram of spheres in 3D, its topology and its geometric invariants
Publication: Research - peer-review › Article in proceedings – Annual report year: 2011

Fast Streaming 3D Level set Segmentation on the GPU for Smooth Multi-phase Segmentation
Publication: Research - peer-review › Journal article – Annual report year: 2011
Flood Progression Modelling and Impact Analysis
Publication: Research › Paper – Annual report year: 2012

Homotopic Object Reconstruction Using Natural Neighbor Barycentric Coordinates
Publication: Research - peer-review › Book chapter – Annual report year: 2011

Homotopy based Surface Reconstruction with Application to Acoustic Signals
Publication: Research - peer-review › Journal article – Annual report year: 2011

RF power consumption emulation optimized with interval valued homotopies
Publication: Research - peer-review › Conference article – Annual report year: 2011

Towards Introducing a Geocoding Information System for Greenland
Publication: Research - peer-review › Paper – Annual report year: 2012

Transactions on Computational Science IX: Special Issue on Voronoi Diagrams in Science and Engineering
Publication: Research - peer-review › Book – Annual report year: 2009

Homotopy Based Reconstruction from Acoustic Images
Publication: Research › Ph.D. thesis – Annual report year: 2010

AMS Mathematical Review of the book "Géométrie discrète et images numériques" (French)
Publication: Research - peer-review › Review – Annual report year: 2010

AMS Mathematical Review of the paper "Computer Algebra for Guaranteed Accuracy - How does it help"
Publication: Research - peer-review › Review – Annual report year: 2010

Deformable Simplicial Complexes
Publication: Research › Ph.D. thesis – Annual report year: 2010

Early Warning And On-Line Mapping For Flood Events
Publication: Research › Book chapter – Annual report year: 2010

Homotopic Object Reconstruction Using Natural Neighbor Barycentric Coordinates
Publication: Research - peer-review › Article in proceedings – Annual report year: 2011

Kinetic Line Voronoi Operations and Their Reversibility
Publication: Research - peer-review › Journal article – Annual report year: 2010

Multi-domain, higher order level set scheme for 3D image segmentation on the GPU
Publication: Research - peer-review › Article in proceedings – Annual report year: 2010

Online mapping and querying health data
Publication: Research - peer-review › Conference abstract for conference – Annual report year: 2010

Optimization-based Fluid Simulation on Unstructured Meshes
Publication: Research - peer-review › Article in proceedings – Annual report year: 2010

Camera Resectioning from a Box
Publication: Research - peer-review › Article in proceedings – Annual report year: 2009
CUDA Accelerated Multi-domain Volumetric Image Segmentation and Using a Higher Order Level Set Method
Publication: Research - peer-review › Article in proceedings – Annual report year: 2009

CUDA based Level Set Method for 3D Reconstruction of Fishes from Large Acoustic Data
Publication: Research - peer-review › Article in proceedings – Annual report year: 2009

Geospatial-Enabled RuleML in a Study on Querying Respiratory Disease Information
Publication: Research - peer-review › Book chapter – Annual report year: 2009

On kinetic line Voronoi operations and finite fields
Publication: Research - peer-review › Article in proceedings – Annual report year: 2009

On the isomorphism between the medial axis and a dual of the Delaunay graph
Publication: Research - peer-review › Article in proceedings – Annual report year: 2009

Sixth International Symposium on Voronoi Diagrams in Science and Engineering (ISVD 2009), Copenhagen, Denmark, June 23-28, 2009
Publication: Research - peer-review › Book – Annual report year: 2009

Tetrahedral Mesh Improvement Using Multi-face Retriangulation
Publication: Research - peer-review › Article in proceedings – Annual report year: 2009

The Voronoi diagram of circles and its application to the visualization of the growth of particles
Publication: Research - peer-review › Journal article – Annual report year: 2009

The Voronoi diagram of half-balls and its application to the prediction of the 3D structure of proteins
Publication: Research › Conference abstract in proceedings – Annual report year: 2009

Towards Web-based representation and processing of health information
Publication: Research - peer-review › Journal article – Annual report year: 2009

A methodology for automated cartographic data input, drawing and editing using kinetic Delaunay/Voronoi diagrams
Publication: Research - peer-review › Book chapter – Annual report year: 2008

AMS Mathematical Review of the journal paper: From Symmetry Breaking to Poisson Point Process in 2D Voronoi Tessellations: the Generic Nature of Hexagons
Publication: Research - peer-review › Review – Annual report year: 2008

A RuleML Study on Integrating Geographical and Health Information
Publication: Research - peer-review › Journal article – Annual report year: 2008

Dynamic GIS
Publication: Research - peer-review › Book chapter – Annual report year: 2008

Dynamic Street Network Analysis for Evacuation Planning in Flood Events
Publication: Research - peer-review › Book chapter – Annual report year: 2008

Early warning and mapping for flood disasters
Publication: Research - peer-review › Article in proceedings – Annual report year: 2008

Geospatial services for decision support on public health
Publication: Research - peer-review › Article in proceedings – Annual report year: 2008
Online GIS services for mapping and sharing disease information
Publication: Research - peer-review › Journal article – Annual report year: 2008

On-line street network analysis for flood evacuation planning
Publication: Research - peer-review › Book chapter – Annual report year: 2008

Ontology-based querying and visualization of geo-referenced health information
Publication: Research - peer-review › Article in proceedings – Annual report year: 2008

Polygon Feature Extraction from Satellite Imagery Based on Colour Image Segmentation and Medial Axis
Publication: Research › Journal article – Annual report year: 2008

The Canadian Geospatial Data Infrastructure and health mapping
Publication: Research - peer-review › Journal article – Annual report year: 2008

Voronoi diagrams of semi-algebraic sets: Delaunay graphs of semi-algebraic sets
Publication: Research - peer-review › Book – Annual report year: 2008

Web-GIS application for flood prediction and monitoring
Publication: Research - peer-review › Book chapter – Annual report year: 2008

A study of the usability of CGDI in health mapping
Publication: Research - peer-review › Conference abstract for conference – Annual report year: 2007

Decision Support for Flood Event Prediction and Monitoring
Publication: Research - peer-review › Article in proceedings – Annual report year: 2007

Existence of a Unique Zero of Nonlinear Systems
Publication: Research › Journal article – Annual report year: 2007

Feature Extraction and Simplification from colour images based on Colour Image Segmentation and Skeletonization using the Quad-Edge data structure
Publication: Research - peer-review › Article in proceedings – Annual report year: 2007

GIS Support for Flood Rescue
Publication: Research › Conference abstract in proceedings – Annual report year: 2007

Reversibility of the Quad-Edge operations In the Voronoi data structure
Publication: Research - peer-review › Article in proceedings – Annual report year: 2007

The Voronoi diagram of circles made easy
Publication: Research - peer-review › Article in proceedings – Annual report year: 2007

Linear Feature Extraction from Satellite Imagery using Fractal Dimension
Publication: Research - peer-review › Article in proceedings – Annual report year: 2006

Map updates in a dynamic Voronoi data structure
Publication: Research - peer-review › Article in proceedings – Annual report year: 2006
Polygon Feature Extraction from Satellite Imagery based on Colour Image Segmentation and Skeletonization
Publication: Research - peer-review › Article in proceedings – Annual report year: 2006

Three Dimensional Modelling of Ocean Temperature Data
Publication: Research - peer-review › Article in proceedings – Annual report year: 2006

Three Dimensional Visualizations of Ocean Temperature Data Sampled with Moving Vessel Proler
Publication: Research › Article in proceedings – Annual report year: 2006

Traveling salesperson approximation algorithm for real road networks
Publication: Research - peer-review › Book chapter – Annual report year: 2006

Voronoi Diagram Based Automated Skeleton Extraction from Colour Scanned Maps
Publication: Research - peer-review › Article in proceedings – Annual report year: 2006

Voronoi diagrams of semi-agebraic sets
Publication: Research › Ph.D. thesis – Annual report year: 2006

A certified Delaunay graph con ict locator for semi-algebraic sets
Publication: Research - peer-review › Book chapter – Annual report year: 2005

Modified Christodes algorithm for Transportation Networks
Publication: Research - peer-review › Article in proceedings – Annual report year: 2005

Real-time updates in Transportation network database
Publication: Research › Article in proceedings – Annual report year: 2005

Route Optimization in Transportation Networks
Publication: Research - peer-review › Article in proceedings – Annual report year: 2005

Skeletonisation using the Voronoï diagram and the Delaunay graph,
Publication: Research - peer-review › Article in proceedings – Annual report year: 2005

The offset to an algebraic curve and an application to conics
Publication: Research - peer-review › Book chapter – Annual report year: 2005

A certified conflict locator for the incremental maintenance of the Delaunay graph of semi-algebraic sets
Publication: Research - peer-review › Article in proceedings – Annual report year: 2004

An algorithm for centerline extraction using natural neighbour interpolation
Publication: Research - peer-review › Article in proceedings – Annual report year: 2004

Line Voronoï diagram based interpolation and application to digital terrain modelling
Publication: Research - peer-review › Article in proceedings – Annual report year: 2004

The Fitting Line Problem in the Laguerre Geometry
Publication: Research - peer-review › Article in proceedings – Annual report year: 2004

A certified predicate for maintaining the topology of the Voronoï diagram for conics
Publication: Research - peer-review › Article in proceedings – Annual report year: 2003
Progressive generalization methods in GIS
Publication: Research › Article in proceedings – Annual report year: 2003

Spatio-temporal map updates in the Voronoi data structure
Publication: Research › Article in proceedings – Annual report year: 2003

Spatio-temporal map updates in the Voronoi data structure
Publication: Research › Article in proceedings – Annual report year: 2003

An exact algebraic predicate for maintaining the topology of the Voronoi diagram for circles
Publication: Research - peer-review › Article in proceedings – Annual report year: 2002

An exact predicate for the optimal construction of the Additively Weighted Voronoi diagram
Publication: Research - peer-review › Article in proceedings – Annual report year: 2002

Line Voronoi diagram based interpolation and application to digital terrain modelling
Publication: Research - peer-review › Article in proceedings – Annual report year: 2001

Reconstructing 2D images with natural neighbour interpolation
Publication: Research - peer-review › Journal article – Annual report year: 2001

2D Image Reconstruction using Natural Neighbour Interpolation
Publication: Research - peer-review › Article in proceedings – Annual report year: 2000

Dynamic Laguerre Diagrams Made Easy
Publication: Research - peer-review › Article in proceedings – Annual report year: 2000

Line Voronoi diagram based local coordinates and applications to Digital Terrain Modelling
Publication: Research › Article in proceedings – Annual report year: 2000

Visualization of the Nucleation and Growth of Particles
Publication: Research - peer-review › Article in proceedings – Annual report year: 2000

Visualization of the Nucleation and Growth of Particles
Publication: Research - peer-review › Article in proceedings – Annual report year: 2000

On the conversion of ordinary Voronoi diagrams into Laguerre diagrams
Publication: Research - peer-review › Article in proceedings – Annual report year: 1999

"Time Travel" Visualization in a Dynamic Voronoi Data Structure
Publication: Research - peer-review › Journal article – Annual report year: 1999

An algorithm for the dynamic maintenance and construction of Additively Weighted Voronoi diagrams
Publication: Research - peer-review › Article in proceedings – Annual report year: 1998

An incremental algorithm for the computation of planar Johnson-Mehl tessellations
Publication: Research - peer-review › Article in proceedings – Annual report year: 1998

Dynamic additively weighted Voronoi diagrams made easy
Publication: Research - peer-review › Article in proceedings – Annual report year: 1998
Extending GIS - integrating multiple spaces into a single concept
Publication: Research - peer-review › Article in proceedings – Annual report year: 1998

Local coordinates and interpolation in a Voronoi diagram for a set of points and line segments
Publication: Research - peer-review › Article in proceedings – Annual report year: 1998

Spatio-temporal change representation and map updates in a dynamic Voronoi data structure
Publication: Research - peer-review › Article in proceedings – Annual report year: 1998

Visualizing changes in a dynamic Voronoi data structure via time travel
Publication: Research - peer-review › Article in proceedings – Annual report year: 1998

An Iterative algorithm for the determination of Voronoi vertices in polygonal and non-polygonal domains
Publication: Research - peer-review › Article in proceedings – Annual report year: 1997

La numérisation rapide de cartes forestières et la numérisation automatique de cartes scannées
Publication: Research - peer-review › Poster – Annual report year: 1996

Navigating in the map
Publication: Research - peer-review › Article in proceedings – Annual report year: 1995

An intelligent and direct manipulation digitizing system
Publication: Research - peer-review › Article in proceedings – Annual report year: 1994

Projects:
- Emulated power and radiance minimization for safer cellular phones with longer lasting batteries
  Project: PhD
- Surface Reconstruction of Coherent Deformable 3D Scans with Topological Recovery
  Project: PhD
- Homotopy based 3D reconstruction of water columns from 2D cross section acoustic data
  Project: PhD

Activities:
- Métodos de análisis intervalar y funcional de modelado matemático multi-dimensional para cartografía y batimetría
  Activity: Talks and presentations › Conference presentations
- Spanish National Congress of Geographic Information Technologies (External organisation)
  Activity: Membership › Membership in review committee
- Member of the Editorial Committee of JGIS (External organisation)
  Activity: Membership › Membership in review committee
- Topological / geometrical methods and data structures for real-world data analysis
  Activity: Talks and presentations › Conference presentations
- Why I care about continuous functions?
  Activity: Talks and presentations › Conference presentations
Universiti Teknologi Malaysia
Activity: Visiting an external institution › Visiting another research institution

Natural Sciences and Engineering Research Council of Canada (External organisation)
Activity: Membership › Membership in review committee

IARIA Computation Tools (External organisation)
Activity: Membership › Membership in review committee

IARIA GeoProcessing (External organisation)
Activity: Membership › Membership in review committee

Working Group II/2 of Commission II of the ISPRS (External organisation)
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar

Hybrid scientific computing using Interval Analysis, Homotopy and Algebraic Geometry for Photogrammetry, GPS and GIS
Activity: Talks and presentations › Conference presentations

International Symposium on Voronoi Diagrams in science and engineering (External organisation)
Activity: Membership › Membership of committees, commissions, boards, councils, associations, organisations, or similar