Merlin Joice Amalanathan

Email: merlinjoice2308@gmail.com

Phone: +91-8608593286

Career Objective

To learn from a challenging environment and desire to develop new ideas to solve problems and contribute for the growth of the organization.

Education

DEGREE	NAME OF THE INSTITUTION	BOARD/UNIVERSITY	PERCENTAGE/ CGPA	YEAR OF PASSING
B.E. Geo-Informatics	College of Engineering, Guindy, Anna University, Chennai	Anna University	CGPA : **9.15**/10	MAY-2017
Higher Secondary	Jaigopal Garodia Govt Girls Higher Secondary School, Saidapet, Chennai	State Board (Tamil Nadu)	**95.4**%	MARCH-2013
Secondary	Jaigopal Garodia Govt Girls Higher Secondary School, Saidapet, Chennai	State Board (Tamil Nadu)	**97.8**%	MARCH-2011

Technical Skills

- **GIS Software Packages*:*** ArcGIS, QGIS **Level: Expert**
- **Instruments worked on:** Total Station, GPS (Handheld and DGPS), Levelling Instruments (Dumpy and Tilting Level), Theodolite, Plane Table, Magnetic Compass, Spectro Radiometer and Stereoscopic Instruments **Level: Intermediate**
- **Image Processing Application*:*** ERDAS Imagine, ENVI **Level: Intermediate**
- **Photogrammetric Package*:*** Photomod **Level:Intermediate**
- **Spectro Radiometer Packages:** RS^3, Field Spec Pro and View Spec Pro **Level:Expert**
- **Programming*:*** C, C++, Javascript **Level:Basic**
- **Web Development:** HTML, Cascading Style Sheets **Level:Expert**
- **Database Software*:*** Oracle Spatial, Spatialite, Postgresql, Open Jump, My SQL database **Level:Expert**
- *Produced GIS maps in hundreds during my internships with **CARTOGRAPHY and GIS** skills* **Level:Expert**
- Good **Presentation** Skills **Level: Intermediate**

- **Microsoft Word and MS Powerpoint Level:Expert**
- **Microsoft Excel Level:Intermediate**

Project and Internships

2015-16 **Project on self-interest with three more members in my team**

Topic **Remote Sensing & GIS based site selection for safe disposal of e-wastes of Chennai.**

Carried out at Remote Sensing and GIS Laboratory, Department of Geology, Anna University, Chennai

Aim To locate environmentally safe sites for e-waste disposal of Chennai city using Multi Criteria Spatial Analysis

Description

E -waste or electronic waste generation is tremendously increasing worldwide and posing a serious threat to global inhabitants. As per the 2014 statistics, 41.8 million metric tons of e-waste is generated globally. India alone contributes 1641 metric kilo tons .The presence of elements like lead, arsenic, cadmium, selenium and brominated flame retardants beyond threshold quantities makes e-waste hazardous in nature. It imposes serious health problems like cancer, liver damage, heart damage, kidney damage, eye and throat irritation.

At present, worldwide, e-waste is not disposed safely; the harmful substances are getting infiltrated into ground water. Thus it is causing serious health problems and it is important to dispose e-waste in a proper site. Our project is aimed at finding suitable sites for disposing e-waste using remote sensing and GIS techniques in order to minimize its environmental impact. Thematic layers like land use, geomorphology, lineament, geology, transportation, depth to water table, rainfall, biodiversity, soil and lithology were generated.

All the thematic vector layers were integrated and introduced into overlaying and weightage analysis to carry out suitable site selection in ArcGIS 10.1 for waste disposal. Potential site for waste disposal have been evaluated from the analysis of geospatial data using computerized GIS software. Ranking was done based on the knowledge of study area to select the best , moderate and least suitable sites for waste disposal .The results showed that remote sensing and GIS can serve as an efficient way for managing data and locating suitable sites for disposing e-waste.

2015 (May, June) Internship Project (single)

Topic **Distribution of Seismic Hazard and its Impact to Population**

Carried out at CSIR Centre for Mathematical Modelling and Computer Simulation, Bengaluru

Aim To identify the level of Seismic Risk of India with respect to Population Density which in turn can help to take preventive measures in those areas based upon their level of Seismic Risk

Description

The Indian subcontinent has a history of devastating earthquakes. The north-eastern region of the country as well as the entire Himalayan belt is susceptible to great earthquakes of magnitude more than 8.0. However, the Himalayan region was considered long "OVERDUE" for an earthquake mainly because of active tectonic movements going on deep underneath. Geographical statistics of India show that almost 54% of the land is vulnerable to earthquakes. So, there is a need to study the risk level of the regions in India.

In this project, the seismic risk is evaluated based on the convolution of seismic hazard and population density. The input data sets consist of earthquake catalogues, seismic hazard data and population census data. An attempt is made to prepare the seismicity map of India showing how the earthquakes of different magnitude are distributed in the different states in India. In result, the seismic hazard (probable shaking) map of India with spatially distributed Peak Ground Acceleration (PGA) was prepared. Further, an attempt is made to generate the seismic risk map of the region based on the population density exposed to the seismic hazard. Also, different earthquake risk zones were identified namely "low", "moderate" and "high". This project used *GIS* software for map generation and *Excel* for catalogue preparation.

2016 (May-June) Internship Project (single)

Topic **GIS based Risk Analysis for Seismically Active Regions in India**

Carried out at Geotechnical Engineering Division, Dept of Civil Engineering, IISc, Bengaluru

Aim To identify the level of Seismic Risk of Seismically active regions in north India using Multi criteria spatial analysis

Description

The northern region of India is much seismically prone than the peninsular India. The study area includes the states of Jammu and Kashmir, Himachal Pradesh, Uttarakhand, Punjab, Chandigarh, Haryana, NCT of Delhi, Uttar Pradesh, Bihar, Sikkim, Jharkhand, West Bengal and parts of Odisha, Chhattisgarh and Madhya Pradesh. These areas mostly fall under Zone 4 and Zone 5 in the **Earthquake zone map of India**.

The earthquake is not the only factor which kills people; it is obvious that the buildings which are prone to hazards are the ones responsible for the devastation of life and property. The buildings which occur in denser population became affected more than the areas with less population.

In this study, several factors such as Hazard in terms of **PGA** (Peak Ground Acceleration) from the **DSHA** (Deterministic Seismic Hazard Analysis), data pertaining to materials used for the buildings which includes the material of **roof**, the material of **wall** and the **floor**, Total Population, Population Density, Urban population, Rural Population, households, houseless population, males, females, workers, non-workers (male, female in both the categories) were considered.

The data on Population Counts, Population Density and Urban-Rural Extents were collected from the **GRUMP** (**G**lobal **R**ural and **U**rban **M**apping **P**roject) to validate the maps prepared from the census data. The

data preparation was done in **Excel** and **GIS** was used for the preparation of thematic layers. The seismic risk maps have been generated separately considering the importance of every factor. The ***Weighted Index Overlay Analysis*** (WIOA) was used for assigning proper weights and convolving the different layers to get the seismic risk map. Hence, for large areas without field survey we can achieve good results with WIOA.

2016 (July-October) (Mini Project during seventh semester done for fulfilling curriculum)

Topic **A Study on the Spectral Parameters of Organic and Inorganic Crops**

Carried out at Institute of Remote Sensing, Anna University, Chennai

Aim To study the spectral characteristics of Organic and Inorganic Crops using collection of field spectra and generation of vegetative indices using Spectro Radiometer, View Spec Pro, Field Spec Pro and MS Excel.

Description

Organic crops are defined as those crops that are grown without the use of synthetic fertilizers, sewage sludge, irradiation, genetic engineering, pesticides, or drugs. Pesticides are chemical or control agents made to kill insects, weeds, and fungal pests that damage crops. Non-organic foods, therefore, are either directly manufactured with or are indirectly contaminated by synthetic fertilizers, sewage sludge, irradiation, genetic engineering, pesticides or drugs. The primary objective of the study is to identify the various spectral characteristics of organic and inorganic crops. This project involves the spectral measurements to characterize organic and inorganic crops and to study the relationship between inorganic constituents and the spectral response of inorganic crops.

A detailed study of the various indices is made. The use of vegetation indices has allowed us to relate the differences in reflectance to changes in canopy characteristics. There are numerous indices all based on ratios based on reflectance of incident light at specific wavelengths. Spectral information has been used to evaluate the various parameters like canopy characteristics etc. The result of this project includes certain well defined indices, spectral libraries of the variants of organic and inorganic crops.

2017 (December-March) (Main Project during Eighth semester done for fulfilling curriculum)

Topic **Assessment of Industrial Exposure on Cancer Occurrences using Remote Sensing and GIS**

Carried out at Institute of Remote Sensing, Anna University, Chennai

Aim To identify the level of Cancer risk for the study region Erode, Tamil Nadu using Industrial Exposure and Cancer Occurrences using simple GIS analysis

Description

Cancer is known to be the most vulnerable disease to mankind. Cancer rates in India are lower than those seen in western countries, but are rising due to increase in life expectancy and changes in lifestyles. It is becoming an increasingly important factor and the global burden of cancer continues to increase. The number of new cases is expected to grow by 50% over the next 20 years to reach 15 million by 2020. Although, there are many polluting industries in places such as Tirupur, Vellore and Ranipet, but the cancer occurrence is the highest in Erode that is the reason for choosing Erode among other districts in Tamil Nadu.

Among the taluks in Erode, Perundurai has been chosen as the study area because it is the industrial hub of Erode. Since Geographic Information Systems (GIS) technologies are evolving rapidly and increasingly used for mapping disease occurrence as a way to explore spatial and temporal patterns, it has been used to map the distribution of Cancer and categorize the level of exposure such as low, moderate and high for the study area.

The input data sets consist of Remote Sensing data, Cancer Registry data, Population data, Industries, Health Centres, Pollutants and Water Bodies and Canals data. The Land use Landcover map for the study area has been prepared for the Supervised Classification. An attempt is made to prepare the graph between 2001-02 and 2012-13 gender wise cancer data for the various cancer types. Also, the various thematic maps showing the distribution of the various types of Cancer have been done. In result, GIS Overlay operation was performed to attain the final map showing the level of cancer risk based on industrial exposure and cancer occurrences.

Workshops Attended

2015 Web GIS Mapping for Android Workshop at "Celestia" 2015 – Intra College Symposium by the Society of Geoinformatics Engineers, Anna University, Chennai

2014 Basics of Robotics and Automation Workshop conducted by CEG Tech Forum

Awards and Certifications

Academics:

2016 Received "MIKE BARNSLEY AWARD" for securing highest marks in Digital Image Processing

2011-13 Received awards for securing "SCHOOL FIRST", "CENTUM SCORER" and "SUBJECTS TOPPER" in SSLC and HSC Examinations

2009 Awarded "ULLAS TRUST YOUNG ACHIEVERS SCHOLARSHIP"

Presentations:

YEAR	TITLE	LEVEL OF PARTICIPATION AND PLACE
2015	Remote Sensing and GIS based site selection model for disposal of e-waste of Chennai city	Best Poster at "CELESTIA" – Intra College Symposium organized by Society of Geoinformatics Engineers, Anna University, Chennai
2016	WIOA Model for safe disposal of e-wastes of Chennai city	Presented paper at "National Seminar on Geoinformatics Applications in Natural Resources Management" which is also published in their Journal : "***Geo-Informatics Applications in Natural Resources Management"*** and First Runner Up at "AGE"- Inter College Technical Symposium organized by Society of Geologists, Anna University, Chennai

Other Certifications:

2016 Certificate Course on "ORACLE PL-SQL PROGRAMMING" at RCC, Anna University, Chennai

2010 and 2011 Received "FIRST PLACE" in Singing Competition at High School Level

2009,11 and12 Received awards for English and Tamil Essay Writing in both Intra and Inter School Level

2008 and 2011 "FIRST CLASS WITH DISTINCTION" in the Tamil Student Association Examination

2010 First Runner up in the ALL CHENNAI SPELLINC competition

2007 and 2004 Received awards for "THIRUKKURAL" competition

Extra Curricular Activities

- Attended the Special Camping Programme as a Youth Red Cross Volunteer at Kadalur Village from 21st to 27th June 2014
- Participated in the Largest Human National Flag Formation conducted by Rotary International District 3230 at YMCA Grounds Nandanam, Chennai on 7 December 2014
- Worked as Rotary President at High School Level (2011-13) for the Rotary Club of Madras Metro (District 3230)
- Coordinator of the Articles team of Spatia(2015) –a Newsletter from the Society of Geoinformatics Engineers, Anna University, Chennai
- Exclusive Organizer of the events "GEOMADNESS" and "MANAGERIA" at Geohorizon 2015 and 2016 – Inter College Symposium organized by the Society of Geoinformatics Engineers, Anna University
- Exclusive Organizer of the event "AGARAMAKKU" – Technical TAMIL event at Celestia 2016 – Intra College Symposium organized by the Society of Geoinformatics Engineers, Anna University

- Workshop Core of Geohorizon 2017 and successfully conducted two workshops “GEOVISUALIZATION AND GEOANALYTICS IN REAL ESTATE AND TOWN PLANNING” and “CORRIDOR MAPPING”
- Class Representative for the year 2016-17

Areas of Interest

Multi criteria spatial analysis, Project Management, GIS, Software Applications and Programming, Digital Image Processing

Publications

Published our project paper on “WIOA Model for safe disposal of e-wastes of Chennai city” in their journal : “***Geo-Informatics Applications in Natural Resources Management***”.

Personal Details

Parents	L. Amalanathan and A. Mercy
Date of Birth	23-08-1995
Gender	Female
Languages Known	Tamil (Read/Write/Speak),English (Read/Write/Speak) and currently learning French using internet
Hobbies	Singing, Writing Tamil Poems and Stories and Reading Quora
Residential Address	No: 7, Balaji Nagar, 14th Street, Anagaputhur, Chennai-600070.

I hereby declare that all the information mentioned above is true to my knowledge and I bear the responsibility for the above mentioned particular.

Place: Chennai (Merlin Joice Amalanathan)