Remote Sensing Applications in Geoscience

Our LOGO

Short introduction about the work:

Remote sensing for geoscience is remotely monitoring the environment and acquiring data non-intrusively for geological sciences. The field of work is explored by remote sensing researchers as a separate discrete science whereas it is a complementary method to field observation because it allows mapping of geological characteristics of regions without the need of physical contact with the survey region. In geoscience, remote sensing could be used to identify minerals and rocks, soil texture and moisture content, study inaccessible areas, etc. Besides that, the data analysis is primarily performed either with the use of image processing or with the integration with Geo Information Systems (GIS) softwares. We focus on application of remote sensing to identify minerals and percentage of availability of those. The team develops methods and algorithms which combine land cover mapping and mineral mapping to achieve the task at hand. Moreover, the analyses of the remotely sensed data are performed using signal and image processing theories and techniques.

Key results:

- Detection of Ilmenite in Pulmudai, Sri Lanka and computation of mineral presence likelihood.
- Lithological map generation for Limestone in Jaffna, Sri Lanka using single-target detection method.

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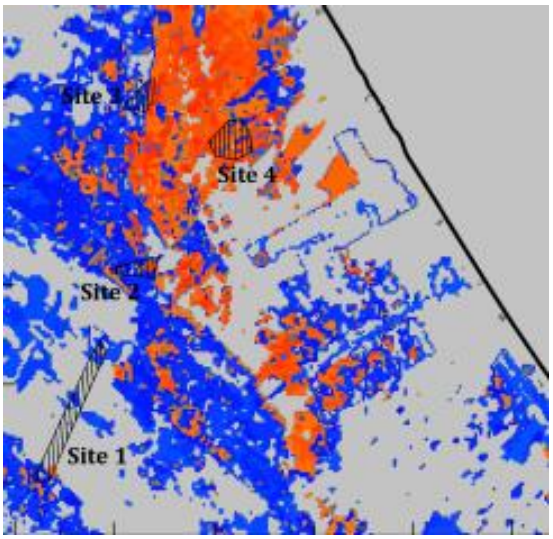

Beneficiaries of the research (optional):

- Scholars/ researches working on mineral and lithological mapping using satellite images
- Geological surveyors performing field surveys for lithological mapping

Outcome and/or Output of the research

1. Ekanayake, E., Vithana, S., Ekanayake, E., Rathnayake, A., Abeysekara, A., Oorloff, T., Herath, H., Godaliyadda, G., Ekanayake, M. and Senaratne, A., "Mapping ilmenite deposit in Pulmudai, Sri Lanka using a hyperspectral imaging-based surface mineral mapping method",

Journal of the National Science Foundation of Sri Lanka, Vol. 47, no. 3, pp.271–284, 2019. DOI: http://doi.org/10.4038/jnsfsr.v47i3.9276

2. D.Y.L. Ranasinghe, H.M.S. Lakmal, H.M.H.K. Weerasooriya, E.M.M.B. Ekanayake, H.M.V.R. Herath, G.M.R.I.Godaliyadda, M.P.B. Ekanayake, "Hyperspectral Imaging Based Method to Identify Potential Limestone Deposits," in proceedings of 14th IEEE International Conference on Industrial and Information Systems (ICIIS-2019), Peradeniya, Sri Lanka, December, 2019. DOI: 10.1109/ICIIS47346.2019.9063280

Research team

Prof. Vijitha Herath
Dr. Roshan Godaliyadda
Dr. Parakrama Ekanayake
Prof. Athula Senaratne
Sajani Vithana
Shane Oorloff
Mevan Ekanayake
Hasantha Ekanayake
Anusha Rathnayake
Yasiru Ranasinghe
Sanjaya Lakmal
Kavinga Weerasooriya
Shehan Senarath

Dr. G.M.R.I. Godaliyadda[1], Dr. M.P.B. Ekanayake[1], Prof. H.M.V.R. Herath[1], H.M.H.K. Weerasooriya[1], D.Y.L. Ranasinghe[1], Dhananjaya Jayasundara[1], Lakshitha Ramanayake[1], Neranjan Senarath[1], B. Rathnayake[2], E.M.M.B. Ekanayake[3]

[1]Department of Electrical and Electronic Engineering, University of Peradeniya, 20400, Sri Lanka
[2]Department of Electrical, Computer, and Systems Engineering, Rensselaer Polytechnic Institute, Troy, 12180, USA
[3]Department of Electrical and Computer Systems Engineering, Monash University, Clayton, Victoria 3800

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LOGO of collaborators and/or funding agency

Department of Electrical and Electronic Engineering, University of Peradeniya