

Muhammad Abdul Hakim Muhamad

Lecturer

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Areas of Expertise

Hydrographic Surveying, Marine Habitat Mapping and Modelling, GIS, Geospatial Analysis, Spatial Modelling and Visualisation, Machine Learning

Personal Information

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College of Built Environment (CBE),
40450 Universiti Teknologi MARA.

Academic Qualifications

Doctor of Philosophy, 2022, Universiti Teknologi Malaysia (UTM), Malaysia
MSc in Geographic Information Science, 2017, Universiti Teknologi MARA (UiTM) , Malaysia
BSc in Surveying Science & Geomatics (Honours), 2016, Universiti Teknologi MARA (UiTM) , Malaysia
Diploma in Geomatic Science (Natural Resource), Universiti Teknologi MARA (UiTM) , Malaysia

Teaching and Learning

1. Degree, GSS614 - Hydrographic Surveying (March 2022 - July 2023)
2. Degree, GSS687 – Geospatial Data Analysis (March 2022 - July 2023)
3. Degree, GSS687 – Geospatial Data Analysis (March 2022 - July 2023)
4. Degree, GSS687 – Geospatial Data Analysis (March 2022 - July 2023)
5. Degree, GLS/GSS613 - Geographic Information System (October 2022 - February 2023)
6. Degree, BSR413 - Land Surveying (October 2022 - February 2023)
7. Degree, GSS614 - Hydrographic Surveying (October 2022 - February 2023)

8. Degree, GSS687 – Geospatial Data Analysis (October 2022 - February 2023)
9. Degree, GLS/GSS613 - 3D Metrology (October 2022 - February 2023)
10. Degree, GSS556 - Cartography (October 2022 - February 2023)

Student Supervision

Bachelor Degree

1. Supervisor for Dissertation 1 (GLS683), Universiti Teknologi MARA, Evaluation of Shoreline Changes at the Coastal Area of Klang, Selangor, Abraham Aldo Gilbert (2023).
2. Supervisor for Dissertation 1 (GLS683), Universiti Teknologi MARA, Integrating Multibeam Echosounder and Satellite Derived Bathymetry for Mapping of Shallow Water Environments, Selangor, Darren Jelius (2023).
3. Co-supervisor for Projek Sarjana Muda (PSM), Universiti Teknologi Malaysia, Bachelor of Science Geoinformatics with Honours (2020).
4. Co-supervisor for Industrial Training Student, Universiti Malaysia Terengganu, G15 – Marine Science (2019).

Publications

1. Muhamad, M. A. H., Che Hasan, R., Md Said, N., and Ooi, J. L. S. (2021). Seagrass habitat suitability model for Redang Marine Park using multibeam echosounder data: Testing different spatial resolutions and analysis window sizes. PLOS ONE 16(9): e0257761. <https://doi.org/10.1371/journal.pone.0257761>. (Q2, IF: 3.24).
2. Muhamad, M. A. H., Che Hasan, R. (2022). Seagrass mapping using species distribution modeling and multibeam echosounder around Redang archipelago. GeoHab 2022, Marine Geological and Biological Habitat Mapping. Venice, Italy. (Abstract & Oral Presentation).
3. Muhamad, M. A. H., Che Hasan, R. (2022). Seagrass Habitat Suitability Models Using a Multibeam Echosounder Data and Multiple Machine Learning Algorithms. Paper accepted for IGRSM International Conference and Exhibition on Geospatial & Remote Sensing. (Indexed by SCOPUS).
4. Muhamad, M. A. H., Che Hasan, R. (2019). Seagrass habitat suitability map at Merambong shoal, Johor: a preliminary study using multibeam echosounder and maxent modelling. The International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences, Volume XLII-4/W16, 2019 6th International Conference on Geomatics and Geospatial Technology (GGT2019). <https://doi.org/10.5194/isprs-archives-XLII-4-W16-463-2019>. (Indexed by SCOPUS).
5. Muhamad, M. A. H., Che Hasan, R. (2022). Implementation of tilted multibeam echosounder data and random forest for shallow water marine habitat mapping. Abstract presented at the Tropical Ocean and Marine Sciences International Symposium (TOMSY2022). (Abstract & Oral Presentation).
6. Muhamad, M. A. H., Che Hasan, R. (2018). Multibeam echo sounder sonar for seagrass mapping. Paper presented at the Tropical Ocean and Marine Sciences International Symposium (TOMSY2018). (Oral Presentation).
7. Muhamad, M. A. H., Che Hasan, R. (2022). Marine Habitat Mapping Using Machine Learning, The Great Benefits of the Advancement of Uncrewed and Autonomous Technology. Hydro International. September 23, 2022.

Research Grants and Contracts

1. Acoustic Classification Tool for Automatic Seabed Segmentation, Tier 1, RM50,000, 15/11/2015 - 14/03/2017.

2. Acoustic Scattering from Seagrass Habitats for High Resolution Species Distribution Modelling, Fundamental Research Grant Scheme, RM83,952, 15/08/2017 - 14/08/2019.
3. Determination of Potential Automated Classification Method for Shallow Water Coral Reef Habitat Mapping, Tier 1, RM50,000, 01/02/2018 - 31/01/2020.
4. Benthic Habitat Mapping for Redang Marine Park, Industry-International Incentive Grant, RM10,000, 01/04/2020 - 30/09/2021.
5. Multibeam Sonar Backscatter Analysis and Characterisation for Marine Habitat Mapping at Tioman Marine Park, Contract Research DTD, RM10,000, 01/04/2021 - 31/08/2021.
6. Modelling Acoustic Scattering Properties from Multispectral Backscatter for Marine Habitat Identification and Mapping, Fundamental Research Grant Scheme, RM183000, 01/09/2022 - 31/08/2025.

Consultation & Expertise

1. Consultant for Kursus Asas Ukur untuk Tenaga Kerja Tenaga Nasional Berhad (2023).
2. Dissertation 1 Defense Research Proposal (DRP) Examiner (BSc in Surveying Science & Geomatics – Title: Comparison of GPS Tropospheric Delay Derived from Different Software.
3. Dissertation 1 Defense Research Proposal (DRP) Examiner (BSc in Surveying Science & Geomatics – Title: Troposphere Effects in GPS Positioning.
4. Dissertation 1 Defense Research Proposal (DRP) Examiner (BSc in Surveying Science & Geomatics – Title: Investigate Ionospheric Effect on GPS Signals over Peninsular Malaysia.
5. Dissertation 1 Defense Research Proposal (DRP) Examiner (BSc in Surveying Science & Geomatics – Title: Comparison of InSAR and Conventional Applications for Monitoring Land Subsidence in Shah Alam.
6. Dissertation 1 Defense Research Proposal (DRP) Examiner (BSc in Surveying Science & Geomatics – Title: The Integration Between GNSS and InSAR Observations for Structural Monitoring in Shah Alam, Selangor.
7. Dissertation 1 Defense Research Proposal (DRP) Examiner (BSc in Surveying Science & Geomatics – Title: Determination Volume of Spatium Object With 3D Modelling by Terrestrial Laser Scanner (TLS).
8. Dissertation 1 Defense Research Proposal (DRP) Examiner (BSc in Surveying Science & Geomatics – Title: Legislation Concerning Spatium in Malaysia.
9. Dissertation 1 Defense Research Proposal (DRP) Examiner (BSc in Surveying Science & Geomatics – Title: Interactive Programming of Digital E-Tide - Using Python, HTML, CSS And JavaScript.
10. Dissertation 1 Defense Research Proposal (DRP) Examiner (BSc in Surveying Science & Geomatics – Title: Assessment on Seabed Visualisation Improvement Using Multibeam Backscatter Data.
11. Dissertation 1 Defense Research Proposal (DRP) Examiner (BSc in Surveying Science & Geomatics – Title: Analysis of Erosion and Sedimentation Patterns using Bathymetric Data And Mike 21 Software in Pinang River, Jelutong, Penang.
12. Dissertation 1 Defense Research Proposal (DRP) Examiner (BSc in Surveying Science & Geomatics – Title: Determination of Lowest Surface Point for Stratum Using Various Interpolation Techniques.
13. Dissertation 1 Defense Research Proposal (DRP) Examiner (BSc in Surveying Science & Geomatics – Title: The Suitability of Smartphone Lidar Scanners For 3D BIM Applications.
14. Dissertation 1 Defense Research Proposal (DRP) Examiner (BSc in Surveying Science & Geomatics – Title: A Comparison Of 3D LiDAR Reconstruction Building Using Different Softwares.
15. Dissertation 1 Defense Research Proposal (DRP) Examiner (BSc in Surveying Science & Geomatics – Title: Accuracy Assessment on Heighting Using Global Navigation Satellite System on Various Method.
16. Dissertation 1 Defense Research Proposal (DRP) Examiner (BSc in Surveying Science & Geomatics – Title: Assessment of Depth Using USV Technique.

17. Viva Voce Chief Examiner (BSc in Surveying Science & Geomatics). Title: Analysing the Efficiency of Rail-Transit by using AHP and GIS.
18. Viva Voce Chief Examiner (BSc in Surveying Science & Geomatics). Title: Spatial Risk Assessment of Sick Building Syndrome at College of Built Environment, UiTM Shah Alam
19. Viva Voce Chief Examiner (BSc in Surveying Science & Geomatics). Title: Designing a Proposed Cycling Routes Map at Section 7, Shah Alam.
20. Viva Voce Chief Examiner (BSc in Surveying Science & Geomatics). Title: Determining Optimal Location of Waste Bin by Using SPATIAL- MCDA.
21. Viva Voce Chief Examiner (BSc in Surveying Science & Geomatics). Title: Analysing the Impact of Accessibility to Rails-services Towards Property Values by using GIS.
22. Editor for Proceedings of International Conference on Engineering Business Management (ICEBM2022), 20 – 21 August 2022, Virtual Conference. Jointly organized by: Razak Faculty of Technology and Informatics, Universiti Teknologi Malaysia, Kuala Lumpur, Malaysia & Graduate School of Business Administration, Meiji University, Tokyo, Japan.

Services & Administration

1. Committee - 9th International Conference on Geomatics and Geospatial Technology (GGT) 2023.
2. Committee – Sambutan 5 Dekad SUG dan Makan Malam PASUG (2023).

Work and Collaboration Experience

1. Application of acoustic sonar and seagrass habitat suitability modelling in Merambong shoal, Johor (2017).
2. Application of acoustic sonar and seagrass habitat suitability modelling in Labuan Marine Park (Kuraman Island), Federal Territory of Labuan (2017).
3. Application of geographical information system (GIS) for place of worship in Kuala Terengganu, Terengganu (2018).
4. Application of acoustic sonar and seagrass habitat suitability modelling in Redang Island, Terengganu (2018).
5. Monitoring of Mangrove at Pulau Burung, Pantai Cahaya, Port Dickson, Negeri Sembilan(2018).
6. Monitoring of Mangrove at Pasir Panjang, Port Dickson, Negeri Sembilan(2018).
7. Application of acoustic sonar and seagrass habitat suitability modelling in Sibul Island, Mersing, Johor.
8. Mangrove Knowledge Transfer for Sustainable Economic Development (MAKSED+) with Penang Inshore Fisherman Welfare Association (PIFWA) at Nibong Tebal, Pulau Pinang (2019).
9. Mangrove Knowledge Transfer for Sustainable Economic Development (MAKSED+) with Sg Timun Fishermen Association (STFA) at Sungai Timun, Linggi, Negeri Sembilan (2019).
10. Ground-truthing (video sampling) in seagrass occurrence detection for species distribution modelling in Redang Island, Terengganu (2019).
11. Application of acoustic sonar and machine learning (habitat suitability modelling and image classification) in Redang Island, Terengganu (2020).
12. Application of acoustic sonar for marine habitat mapping in Tioman Island, Pahang (2021).
13. Ground-truthing (video sampling) in coral occurrence detection for image classification using machine learning algorithm in Tioman Island (2021).
14. Integration of habitat suitability modelling (Maximum Entropy) and supervised classification (Random Forest) for marine habitat mapping in Redang Island, Pahang (2021).

15. Application of machine learning (Supervised Classification using Random Forest Algorithm) for marine habitat mapping in Tioman Island, Pahang (2022).

Awards & Recognitions

1. GeoHab 2022 (Marine Geological and Biological Habitat Mapping) - GeoHab's Ron McDowell Student Support Award.
2. Excellent (Grade B1) Achievement in PhD Thesis - Seagrass Mapping using Habitat Suitability Modeling and Multibeam Echosounder around Redang Archipelago, Universiti Teknologi Malaysia.

Contribution to Society

1. Stakeholder Workshop on Seagrass Conservation in Malaysia (2022).
2. Secretariat for Program Kesedaran Alam Hutan Paya Bakau (2019).
3. Mangrove Knowledge Transfer for Sustainable Economic Development (MAKSED+) with Penang Inshore Fisherman Welfare Association (PIFWA) at Nibong Tebal, Pulau Pinang (2019).
4. Mangrove Knowledge Transfer for Sustainable Economic Development (MAKSED+) with Sg Timun Fishermen Association (STFA) at Sungai Timun, Linggi, Negeri Sembilan (2019).
5. Penjanaan Ekonomi Komuniti Berasaskan Spesis Berembang (2019).

Other Activities

1. Committee for PSGSA Vetting (KAB), Geodesy GNSS & Hydrography, Final Assessment July 2023.
2. Secretariat for National Geomatics/Geoinformatics Student Innovation Competition 2022 (10th NGSIC).
3. Secretariat for Meet & Greet the MEBM Graduands @TNE Sudan.
4. Secretariat for Courtesy Visit from the President and CEO of GIAD Industrial Group, Sudan to RFTI.
5. Co-supervisor for Projek Sarjana Muda (PSM), Universiti Teknologi Malaysia, (Bachelor of Science Geoinformatics with Honours).
6. Secretariat for Backscatter Course 2020.
7. Secretariat for Penjanaan Ekonomi Komuniti Berasaskan Spesis Berembang.
8. Secretariat for Program Kesedaran Alam Hutan Paya Bakau.
9. Secretariat for Lawatan Pendidikan Kilang Arang Kayu.
10. Secretariat for Mangrove Knowledge Transfer for Sustainable Economic Development + (MAKSED+).
11. Secretariat for Program Latihan Simulasi Kejadian Bencana Tanah Runtuh 'CPX-IDAMAN 2018'.
12. Secretariat for Backscatter Course 2018.
13. Secretariat for Tidal Course 2018.
14. Facilitator for "Ekspo Selangkah ke UiTM" 2016.
15. Member of Geomatic Student Society UiTM Perlis (GEOMASS) 2015 – 2016.
16. Others.