Ali Alakbar Karaki

2/14/2024

Surveying engineer, Hydrography Category A

I am a third year PhD student for which I won a scholarship in engineering for marine and coastal environments. I hold two master's degrees in surveying engineering and hydrography and oceanography, and I strive to integrate knowledge to have meaningful contribution in my area of specialization. I am excited to explore new experiences and gain multiple skills experiences.

Education and training

15/03/2023 – 31/03/2023

TRAINEE, BATHYMETRIC SURVEY Stf land & sea survey

The training was about planning and performing a bathymetric survey in Molfetta (south of Italy) using MBES (Multibeam echosounder). The workflow was about preparing the database, MBES calibration, performing the survey and data processing. Qinsy and Qimera software's were used.

15/01/2023 – 02/2023

REMOTE PILOT IN OPEN CATEGORY, SUBCATEGORY A2 Scuola Droni Genova

Theoretical and practical practice for remote pilot exam in open category, subcategory A2

03/09/2022 – 09/09/2022

SUNRISE SUMMER SCHOOL; SEASHORE AND UNDERWATER DOCUMENTATION OF ARCHAEOLOGICAL HERITAGE ENVIRONMENT ISPRS and SIFET

General overview of the state of the art of the different geomatics techniques that can be used for the documentation of both the Cultural Heritage (emerged and submerged) and the environment in which it is located, constituting the coastal heritage, legal and social context. The summer school involved fieldwork activities, and data processing and by using traditional topographic techniques (such as GNSS and Total Station), moving towards terrestrial, aerial, and underwater photogrammetry, and range-based techniques such as Terrestrial Laser scanning.

01/11/2021 – 30/11/2021

REMOTE PILOT IN OPEN CATEGORY, SUBCATEGORY A1/A3 Scuola Droni Genova

Theoretical and practical practice for remote pilot exam in open category, subcategory A1/A3

31/10/2021 – CURRENT

PHD IN MARINE SCIENCE AND TECHNOLOGIES University of Genoa

The PhD research project focuses on the definition, implementation and validation of a methodology to execute integrated aerial and underwater surveys of coastal areas and harbour infrastructures to

develop new services for marinas, public authorities, and blue economic operators. The research will be carried out with an interdisciplinary approach mainly involving Geomatics and Robotics and many other disciplines to suggest a methodology that may be realistically adopted by nautical services.

01/06/2021 – 30/07/2021

HYDROGRAPHIC AND TOPOGRAPHIC SURVEYS TRAINING Hydrographic Institute of the Italian Navy

1) Planning and preparation (Select the correct instruments, plan of the conduction of the bathymetric survey, plan of the oceanographic activity, plan of the seabed characterization, connection and set up of the instruments, mobilization planning)

2) Survey at sea & Geodetic Activity (Hydrographic survey, oceanographic acquisition, geodetic and topographic acquisition/ processing)

3) Data analysis, process and report (Hydrographic processing, oceanographic processing, final report)

25/05/2021 – 31/08/2021

MULTI-SENSOR MULTI-PLATFORM SURVEY FOR COASTAL AREAS TRAINING CNR-INM (National Research Council-Institute of Marine Engineering), Unige Geomatics Laboratory

I worked in parallel as trainee at CNR-INM (National Research Council-Institute of Marine Engineering) and Geomatics Laboratory of Genoa University, while developing my Master thesis. Multi-sensor multi-platform survey of coastal areas Internship held at the laboratories of the Marine Engineering Institute CNR-INM (National Research Council-Institute of Marine Engineering), as well as at the Geomatics laboratory of DICCA (University of Genoa), seeking to develop methodologies for mapping coastal areas using multi-sensory systems mounted on aerial and marine drones. My main activities included the experience of conducting surveys using GNSS (Global Navigation System), Total Station, Laser scanner, aerial and terrestrial photogrammetry, bathymetric survey utilizing acoustic sensors and the capability to process the data.

08/2019 – 23/09/2021

MASTER OF SCIENCE IN HYDROGRAPHY AND OCEANOGRAPHY (CATEGORY A) Hydrographic Institute of the Italian Navy and University of Genoa

Thesis Project is in collaboration with CNR (National Research Council) in Genoa, Italy Address Genoa, Italy Website https://unige.it/it/ Final grade 110/110 + laude Thesis Multi-platforms and multi-sensors integrated survey for the submerged and emerged areas

09/2016 – 05/2018

MASTER OF SCIENCE IN SURVEYING ENGINEERING Lebanese International University

Thesis Project was in collaboration with CNRS (National Council for Scientific Research) in Lebanon

Thesis Assessment of Coastal Area Variation " Tyr Stretch"

02/2013 – 06/2016

BACHELOR OF SCIENCE IN SURVEYING ENGINEERING Lebanese International University

Thesis Project was in collaboration with Qlaiaa Village Municipality.

LANGUAGE SKILLS

Mother tongue(s): ARABIC

Other language(s): ENGLISH (FLUENT ORAL & WRITTEN) | ITALIAN (A1)

DIGITAL SKILLS

Computer Skills

Microsoft Office, Geographic Information System (QGIS, ArcGIS), Cloud Compare, QPS, Qinsy, Autodesk (Autocad, Civil 3D), Image Processing (Erdas), Adobe Photoshop, 3dfzaphyr, Agisoft Metashape, python

Technical skills

Bathymetric surveying equipment, underwater photogrammetry, Topographic instruments (total station, laser scanner, GPS), Aerial and terrestrial photogrammetry, drone pilot

PROJECTS

01/10/2023 – CURRENT

"Coastal Geospatial Fusion: A Novel Methodology for Integrating UAV and Snorkeler Photogrammetry to Reveal the Hidden Depths"A methodology combines topographic photogrammetry using UAVs (Unmanned Aerial Vehicle) and underwater photogrammetry by a snorkeling person to merge topography and bathymetry seamlessly. The motivation is to obtain a photogrammetric recognition for the snorkeler while performing underwater photogrammetry. The snorkeler will be a kinematic GCP (Ground Control Point) with respect to the UAV to link both data sets from different environments. Image processing techniques compute the snorkeler's position relative to the fixed GCPs, enabling determination of the camera position capturing underwater data. Through the joint adjustment process, the achieved measurements of the GCPs imposed in the Bundle Block Adjustment permit to evaluate the observation positioning. The resulting georeferenced 3D model spans from the seabed to the land, providing an RGB 3D representation of the coastal area (merged and submerged).

01/02/2023 – CURRENT

Andora; Survey campaign in the Andora Castell useful for planning restoration interventions in the area. The survey campaign is going on by using GNSS, total station, laser scanner, terrestrial and aerial

photogrammetry covering an area equivalent to 187500 meters2. The main tasks are to obtain accurate network, ground control points, Orthophoto, DTM and DSM.

10/01/2023 – CURRENT

Periodic underwater Photogrammetry to evaluate the growth of ecological habitats Photogrammetry techniques on a monthly basis to evaluate the growth of ecological habitats.

15/09/2022 – 30/09/2022

Chemical museum: Internal survey campaign for complex environment The main task is to reconstruct a 3D model for the chemical museum at the University of Genoa, focusing on the reconstruction of small and detailed objects presented in the museum. The work was done by integrating terrestrial photogrammetry and Laser scanner with the support of total station.

10/2017 – 06/2018

Assessment of Coastal Area Variation in South Area " Tyr Stretch" monitoring and detection the variation occurred (erosion or accretion) of sandy beach in "Tyre stretch" that it is considered a natural reserve area. Moreover, to relate the results with the expected reason (natural or artificial). The monitoring took place over 80 years (1938-2018), the analyzed data was done by using GIS (Geographical Information system)

TEACHING EXPERIENCE

Numerical cartography and GIS, Geomatics for archaeology, Applied geomatics, Geomatics for monitoring

PUBLICATIONS

Ali Alakbar Karaki, Marco Bibuli, Massimo Caccia, Ilaria Ferrando, Sara Gagliolo, Angelo Odetti, Domenico Sguerso (2022). Multi-Platforms and Multi-Sensors Integrated Survey for the Submerged and Emerged Areas. JOURNAL OF MARINE SCIENCE AND ENGINEERING, vol. 10, p. 1-19, ISSN: 2077-1312, doi: 10.3390/jmse100607