Internship Report at the University of Bergen

I had the opportunity to undertake an internship at the University of Bergen, Department of Earth Science, within the Remote Sensing research group. My supervisor, Dr. Benjamin Aubrey Robson, played an integral role in this experience. His guidance, extensive knowledge, and willingness to share insights were invaluable throughout the internship. My work focused on utilizing data from Unmanned Aerial Vehicles (UAVs) and satellite imagery (optical and radar) to study the Jostedalsbreen glacier.

The core of my work involved processing UAV data collected over several years to analyze changes in glacier elevation, velocity, and surface roughness. This process encompassed the full photogrammetric workflow: ingesting raw photographs, applying georeferencing corrections using nearby base stations, generating point clouds and gridded elevation models, and deriving products to track glacier changes over time.

I also conducted analyses of Snow Line Altitude (SLA) and Snow Cover Ratio (SCR), adapting state-of-the-art algorithms for processing Landsat data in Google Earth Engine. This included cloud masking, snow and ice classification, and deriving SLA and SCR metrics for the past 20 years (1993–2023). Using Python and GIS tools, I created time-series datasets and visualized changes in snow and ice distribution.

Another significant aspect of my work involved backscatter analysis using Sentinel-1A radar data. I examined the relationship between radar backscatter and glacier surface properties across elevation bins for the period 2020–2023. This included normalizing backscatter values to reduce outliers and applying advanced techniques to analyze surface dynamics.

Lastly, I performed elevation change analysis by comparing DEMs from UAV, Arctic DEM, and LiDAR data collected over different years. Coregistration and error analysis were applied to ensure accuracy and reliability in the results. These analyses provided key insights into glacier dynamics and surface variability.

Beyond the technical work, this internship was an incredibly enriching experience. I had the chance to meet and collaborate with scientists and students from various countries, engaging in meaningful discussions and knowledge exchange. The social aspect of the program was equally rewarding—coffee breaks, group hikes, and shared meals fostered a sense of community and camaraderie.

The city of Bergen itself was an amazing part of the experience. Nestled between mountains and fjords, it's a perfect place for nature and hiking enthusiasts. Whether it was exploring the trails around Mount Fløyen or enjoying the views of the stunning fjords, Bergen offered endless opportunities to connect with nature. The city's charm and welcoming atmosphere made it a wonderful place to live and work.

The program also included various activities, such as cultural evenings, weekly mini-poster presentations, and conferences, which enhanced my understanding of glaciology and remote sensing while providing a platform to share my own work. Participating in these events not only helped me grow professionally but also allowed me to develop valuable personal connections.

Overall, this internship was a transformative experience that deepened my technical skills, expanded my professional network, and provided unforgettable memories. I am grateful for the opportunity to contribute to such a dynamic and collaborative environment.