**Description:**

The objective of this experiment was to observe the changes in spectral information of a calibration tile when placed underwater. For this purpose, the SPECIM IQ hyperspectral camera was used which operates in Visible and near infra-red regions (400-1000nm) with a spectral resolution FWHM of 7nm resulting in 204 bands in a data cube.

To establish a baseline for comparison, data was acquired before submerging the calibration tile into water. Then the tile was immersed into water and data was recorded under two settings i.e., outdoor and indoor. The latter provided a controlled environment where halogen lamp was used as the light source. Lastly, the tile was removed and data was captured both outside and inside once it had dried off. The data was annotated by assigning numbers to the color tiles from left to right and top to bottom to enable comparison of similar data points under different conditions.

After data acquisition, color tiles were segmented and assigned a number which was consistent across different experimental setups. The segmentation was performed using Segment Anything Model (SAM), an advanced image segmentation algorithm that produces object masks from the given input prompt [1]. Below are examples of tile "1" for all the settings, namely, base, underwater_outside, dry_outside, underwater_inside, and dry_inside (from left to right).
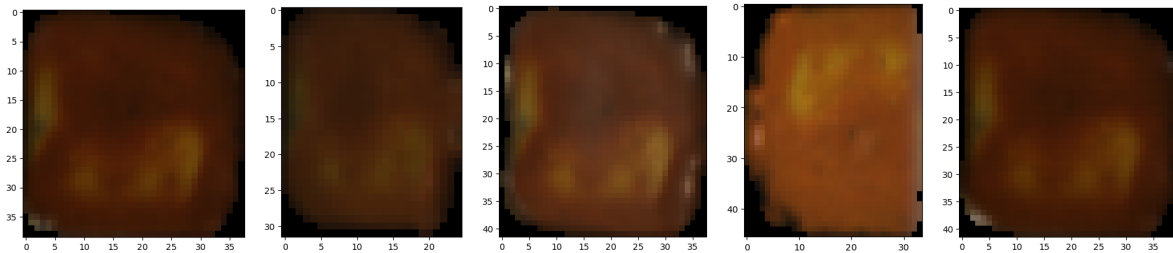
References:

[1] Kirillov, A., Mintun, E., Ravi, N., Mao, H., Rolland, C., Gustafson, L., ... & Girshick, R. (2023). Segment anything. *arXiv preprint arXiv:2304.02643*.