Target: Cylinder object approximately 2.6 m long with radius = 0.53 meter



Standard template with parameter typically used in our template library: Length = 2m, Burial depth = 0.1 m, Aspect angle = 100 deg (The aspect angle is measured clockwise (when viewed from the surface) from the x-axis in a “HUGIN” coordinate system with x = along-track (pointing forward), y = range (point to starboard), z = altitude/depth (pointing down) measure Template 2m length, burial depth = 0).





Overlay of highlight and shadow segments in the image and template for standard template

Correlation scores:

cor = 0.461044, ecor = 0.697791, scor = 0.528064, **essum = 0.612927**

See below for explanation of color encoding and correlation scores

“Adaptive” template fitted to the object in the image: Length = 2.6, Burial Depth = 0.263, aspect angle = 105





Overlay of highlight and shadow segments in the image and template for “adaptive template”

Color encoding:

Dark read = pixels in both template and image highlight segments

Red = pixels only in the template highlight segment

Orange = pixels only in the image highlight segment

Green = Back ground pixels

Light blue = pixels in the in image highlight, but in the template shadow

Cyan = pixels only in the image shadow segment

Blue = pixels only in the image template shadow segment

Dark blue = pixels in both the template and image shadow segments

Correlation scores for “adaptive template”

cor = 0.672603, ecor = 0.818400, scor = 0.806927, **essum = 0.812663**

cor = correlation (between image and template) calculated over all pixels in the template

ecor = correlation (between image and template) calculated over the union of the echo pixels in the image and template

scor = correlation (between image and template) calculated over the union of the echo pixels in the image and template

**essum = 0.5 \* (ecor + scor) (i.e. the average of the echo and the shadows). This is the main score that we usually would use for classification.**

**It is probably best to report only essum in the paper!**

References for correlation score:[1]

[1] H. Midelfart and Ø. Midtgaard, "Robust Template Matching for Object Classification," in J. S. Papadakis and L. Bjørnø, Eds., Proceedings of the 4th International conference on Underwater Acoustic Measurement, 2011, pp. 101-198.