How to See Like a Fish!

Many fish species hunt, navigate, and communicate using *Quasi-Static Electric Fields*

Objects Disturb Self-Generated Field

Fish Body Emulation System

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Evaluation and Measurement Platform

- 2-axis Motion Control Platform
- Gantry-mounted Test Object
- Fish Body Emulation System
- Excitation and Recording Instrumentation (3 Channels)

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Biomimetic Electrostatic Imaging (BEI)

Gantry Object Scan Path

Object Location Estimate (Field Disturbance Image)

Raw Recording (3 Channel)

\[ P_{d_L} = P_L - P_C \]
\[ P_{d_R} = P_C - P_R \]

Differential (2 Channel)
Performance Evaluation

Mean Target Accuracy
The mean distance from the ground-truth target location to each of all the pattern-matched points of field disturbance

Mean Target Area
The percentage of the measured tank area which includes points that pattern-match field disturbances

Most Accurate at Center!

Volume Reduction is Relatively Uniform

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Imaging in Salt Water

Submerged Biomimetic Electrostatic