Markerless Position Measurement
for Ship to Ship Operations

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Ship to Ship (S2S) transfer is used between two floating vessels.
Position of the target-vessel is measured with Octans
Connection with Host vessel via WiFi
Position measurement is used for compensation with gangway
Ship to Ship (S2S)

**Desired Ship to Ship situation**

- Position of the target-vessel is measured from host-vessel
- No data connection with target-vessel
- Position measurement is used for compensation with gangway
Design a markerless measurement system for determining the position of the target-vessel. This system must be located on the host-vessel.
Requirements

- The system is positioned on the host vessel.
- No need for active or passive markers on the host vessel.
- The system needs to operate in the same operational window as the Ampelmann.
- Fault detection.
"A LASER"
Solution

Laser Range finder

Figure: SICK LMS511, Laser Range Finder
Laser Rangefinder

Figure: AmpelScann prototype
Laser Rangefinder

Figure: Laser Rangefinder scanning principle
Laser Rangefinder

Data Acquisition

Pre-processing

Matching Process

LRF

Raw Data

Filtered Data

Transform

Options

Smoothing

Motion Extraction

Transform

Error Metrics

Figure: Laser rangefinder data processing
Solution

Matlab result so far...

X = -62.4167 Y = 37.2687
Solution

Matlab result so far...

\[ X = 19.6671 \quad Y = -0.32642 \]
Solution

Matlab result so far...

Figure: Scan matching and tracking
Solution

Scale testing

Figure: Scale-test setup with AmpelScann and P4