

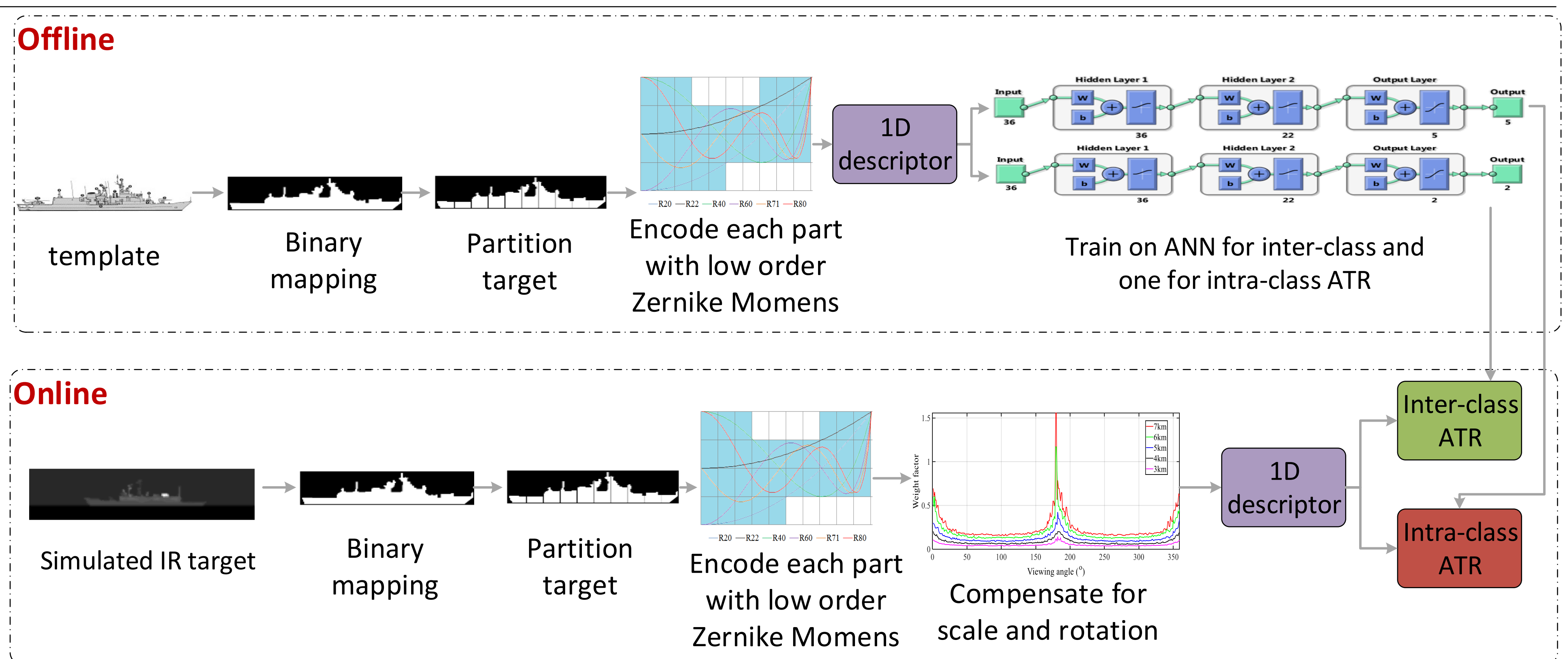


Multi-modal Automatic Target Recognition for Anti-ship Missiles with Imaging Infrared Capabilities

Highlights

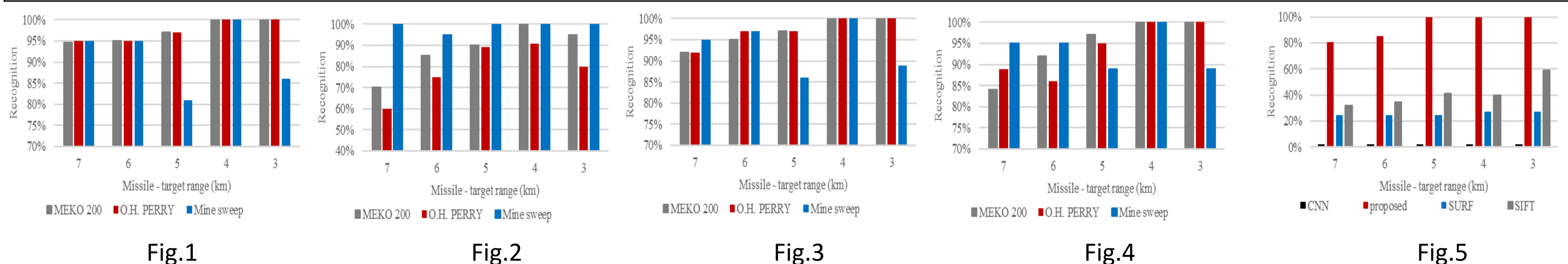
- Novel Automatic Target Recognition architecture for Anti-ship missiles with Imaging Infrared (IR) capabilities
- Combines modified Zernike moments with two multi-layered Artificial Neural Networks
- Multi-modal ATR capability by matching RGB images (from Jane's publication) with thermal target imagery
- Only 1 template per target
- Scale invariance, azimuthal rotation invariance and real-time processing performance

Proposed solution



Experiments

- Single template
- Target observed at 0°-360° with 10° interval at missile – target range of 3km – 7km with 1km interval
- Missile roll stabilized case (Fig. 1)
- Missile roll stabilized case and 3dB noise (Fig. 2)
- Non-missile roll stabilized case with +5° and -5° rolling angle (Fig. 3,4)
- Comparison with CNN-SIFT-SURF at 330°-30° and 150°-210° that have max. target-template variation (Fig. 5)



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