Migrant Activity Surface

Predicting Migrant Activity in the Mediterranean Sea

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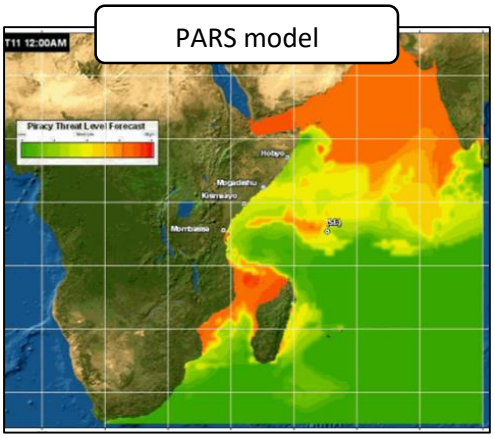
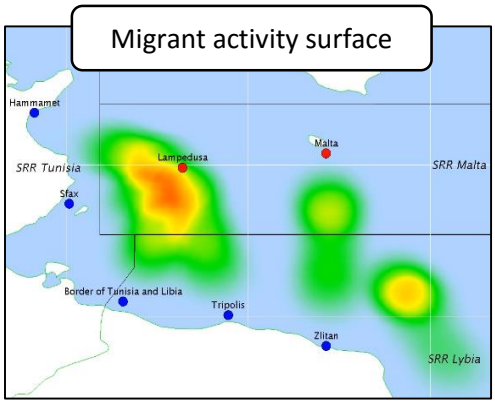
Motivation

The current situation in the Mediterranean Sea is critical. Tens of thousands of refugees and migrants are trying to reach European shores from the coasts of Africa and Asia. The heavily overloaded ships and boats carrying the migrants are in bad condition and with insufficient fuel to reach the shores, often damaged on purpose to incentivize a search and rescue operation. To prevent many people from dying on the open sea and to better utilize the naval assets, it is necessary to know when and where the migrants will be.

Objectives

The objective of this project is to **create a tool modeling the activity of migrants in the following days** taking into account current information on possible transits (INTEL), meteorological and oceanographic conditions (METOC) as well as their reasoning process. Similar to the Pirate Activity Risk Surface (PARS) developed by the Naval Research Laboratory in Monterey [1], we provide the decision makers with a **Migrant Activity Surface** (MAS), a heap map showing for each location and time a probability of migrant boats or ship being present. The migrant activity surface is subsequently used to allocate naval assets or to plan surveillance missions using UAVs.





Technical Approach

Blindspot Solutions has been developing BANDIT simulation platform (funded by the Office of Naval Research Global grants N62909-14-1-N231 and N62909-15-1-N142) **allowing to simulate various maritime scenarios** using a complex behavior model (allowing to capture the INTEL if provided) coupled with a realistic environment model containing geographical boundaries, navigable waters, ocean surface currents and surface. The platform can **execute various scenarios** with differing uncertain parameters and with rich uncertainty models. To compute the migrant activity surface, we execute **tens of thousands of simulation instances**, thus predicting the activity of migrants in the following days.

Simulation Tool

We provide the **operators with a simulation tool** that **predicts immigrant boats locations** based on the time period, the INTEL acquired and the METOC forecasts. The operators have access to rich simulation parameters settings that allows them to examine the problem into **great depths**. The output is **visualization of the migrant activity** in time and numerical values as well.

Find more on: http://blindspot-solutions.com/projects/bandit/demo/

[1] Hansen et al.: Information Domination: Dynamically Coupling METOC and INTEL for Improved Guidance for Piracy Interdiction. NRL Review, p. 109-115. 2011.

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