

## Signal Processing at BAE Systems

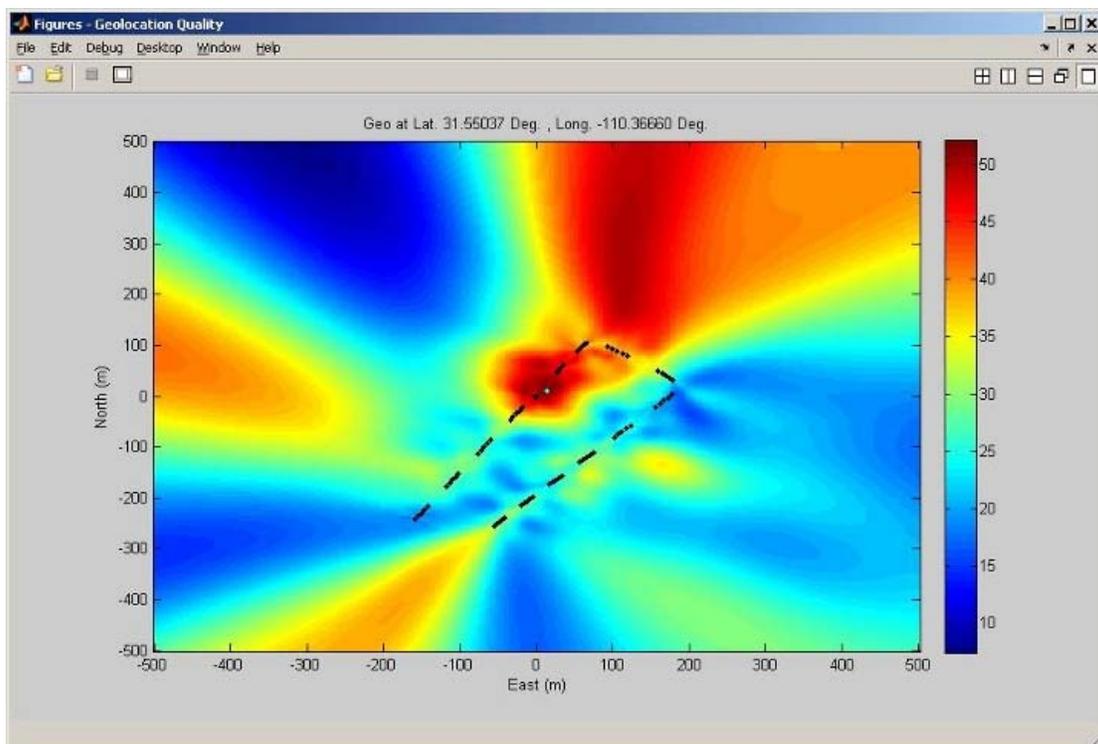
Geolocation is the identification of the real-world geographic location of a target of interest. In this application, the system receives the signal with an array of several antennas and computes the direction of arrival of the radio energy by measuring the time difference of arrival (or the phase difference) at the different antennas.

BAE SYSTEMS sped up a real-world complex signal detection and geolocation algorithm by a factor of 17 on a CUDA-enabled NVIDIA GPU using Jacket. This work was done by an engineer with no previous Jacket experience.

**Authors:** Matt Taylor and Jeff Bryant at [BAE Systems](http://www.baesystems.com)

**Speedup: 17X with Jacket**

### GEOLOCATION QUALITY VIA MATLAB®



Jacket is a GPU engine for MATLAB®. Jacket enables standard MATLAB code to run on the GPU, connecting the user-friendliness of MATLAB directly to the speed and visual computing capability of the GPU.

Jacket is not another GPU API, nor is it simply a collection of GPU MEX functions. Rather, it is a complete and transparent system, automatically making memory transfer and execution optimization decisions. Jacket uses a compile on-the-fly system to allow GPU functions to run in MATLAB's interpretive style. Currently, Jacket is built on NVIDIA's CUDA technology.