

RESOLV Application Workflow

RESOLV technology is offered through software as a service. We provide no-cost demonstrations and will calibrate up to five of your satellites free of charge to verify the accuracy and robustness of the RESOLV software. Helpful for this calibration are the relative spectral responses of your sensors. Required for this calibration are up to ten images of each smallsat delivered as L1C data for target areas of interest we can agree upon as well as explain why. We then evaluate the header information, adjust our software to ingest and process your data. We perform the calibration and then return a Docker container for you to run an unlimited number of images for your evaluation.

Verification of RESOLV Output

We have performed extensive evaluation of the CMAC algorithm and workflow that powers RESOLV software as described in [Journal Papers](#). The algorithm was developed using Sentinel-2 data as the testbed and has been tested for application for Landsat 8/9 and for several smallsat flocks. RESOLV software outperforms competing software for all metrics: no delay processing that uses only scene statistics, greater accuracy, a wider range of atmospheric effect (up to severe haze), and reliability in all environments (including low spectral diversity deserts and grasslands). Of special interest for intelligence and reconnaissance applications, CMAC testing showed that the workflow is most accurate toward the darker end of reflectance magnitude that is critical for vegetation indices and AI feature extraction; competing methods are not.

RESOLV Software Description

RESOLV software versions are built with the C++ programming language. To ensure maximum compatibility across multiple computing environments, it is packaged within a Docker container running Ubuntu Linux. As currently implemented, ARSI places the Dockerfile information into a compressed/zipped tar file uploaded to an AWS server; during this process, a time-limited URL download link is also generated. This download link is sent to the client, along with a bash shell script that retrieves the Docker container information from AWS and builds the container on the client's system.

Along with the download URL link and build script, documentation describing execution of the software from the Docker container is provided, along with ASCII text files allowing the client to configure operation of the software and specify the set of images to be processed.