High-Level Performance Modeling of SAR Systems

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SAUSAGE (Still Another Utility for SAR Analysis that’s General and Extensible) is a computer program for modeling (see figure) the performance of synthetic-aperture radar (SAR) or interferometric synthetic-aperture radar (InSAR or IFSAR) systems. The user is assumed to be familiar with the basic principles of SAR imaging and interferometry. Given design parameters (e.g., altitude, power, and bandwidth) that characterize a radar system, the software predicts various performance metrics (e.g., signal-to-noise ratio and resolution). SAUSAGE is intended to be a general software tool for quick, high-level evaluation of radar designs; it is not meant to capture all the subtleties, nuances, and particulars of specific systems. SAUSAGE was written to facilitate the exploration of engineering tradeoffs within the multidimensional space of design parameters. Typically, this space is examined through an iterative process of adjusting the values of the design parameters and examining the effects of the adjustments on the overall performance of the system at each iteration. The software is designed to be modular and extensible to enable consideration of a variety of operating modes and antenna beam patterns, including, for example, strip-map and spotlight SAR acquisitions, polarimetry, burst modes, and squinted geometries.

This program was written by Curtis Chen of Caltech for NASA’s Jet Propulsion Laboratory. Further information is contained in a TSP (see page 1).

This software is available for commercial licensing. Please contact Karina Edmonds of the California Institute of Technology at (626) 395-2722. Refer to NPO-43373.

shows how a radar system is modeled by SAUSAGE. Blocks represent software objects, which describe physical aspects of the system. Arrays are indicated by stacked blocks. Arrows represent pointers to other objects.