

# Synthetic Aperture Radar Image Formation Simulator for Educational Purpose

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**Abstract** — Design and development of SAR system needs an extensive understanding of SAR technology, takes time and expensive cost. One of prior challenge in SAR technology is process of two-dimensional SAR image formation from raw data SAR. SAR sensor generates huge volume of raw data that should be processed to make two-dimensional image using specific SAR image algorithm. This paper introduces SAR image formation simulator that was developed to simplify SAR system parameter learning, data processing and SAR image formation analysis for researchers, engineers and students. This simulation is implemented by using MATLAB software. It was developed modularly, comprises of three moduls, (1) preparation of Radarsat-1 (SAR) raw data and formation of SAR raw data from point target (2) implementation of image formation algorithm, such as RDA. (3) evaluation of SAR image quality. This simulation also can be used for further analysis and SAR image formation algorithm comparison.

**Keywords-SAR; Image Formation Algoritm; Simulator**