# Implementation the Range Doppler Algorithm on Stripmap Mode of SAR Using Raw Data of Sentinel-1 Satellite

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**Abstract**

Sentinel-1 satellites are spaceborne synthetic aperture radars that operate in C-band and provide the ability to image the surface at all hours of the day and in all weather conditions. The payload of this satellite are capable of imaging in different operating modes such as Stripmap, IW, EW and Wave. The most important and fundamental imaging mode in these instruments is Stripmap mode, and formation the image of this mode is the purpose of this paper. Different processing algorithms have been developed to extract the images of the spaceborne synthetic aperture radar (SAR) in stripmap mode such as Range-Doppler, Chirp-Scaling and Wavenumber. In this paper, the Range-Doppler Algorithm is used because these satellites have low squid angle. The PSNR criteria is used to compare our rusult with level-1 product of Sentinel-1. The comparison of the image extracted by this algorithm with the SLC product, obtained from the Sentinel-1 satellite, shows the high quality and the efficiency of the proposed method.

**Keywords**: Synthetic Aperture Radar, Sentinel-1 Satellite, Range-Doppler Algorithm, Image formation, Imaging Radar