A new algorithm for Increasing resolution of Mobile Mapping Systems

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Mobile mapping systems (MMS) provides good resolution of images, but sometimes desired resolution is much more higher. Common methods such as changing signal parameters, using complicated antenna arrays provides higher resolution, but expensive.

In this paper presented method of increasing resolution due to advanced processing technique without changing MMS parameters. Space resolution, which is determines by space ambiguity function of signal (image of MMS is a convolution of real image and space ambiguity function), was considered as a resolution-quality appraisement. Of course, higher resolution provides higher quality of image and allow recognize objects more accurately and detect small targets.

By using de-correlation of the input signal width of space ambiguity function (for both coordinates of a surface) may be decreased - this results in higher resolution in space.

In this paper derived optimal algorithm for processing with de-correlation for producing high-resolution image and for accurate parameter estimation, shown space ambiguity functions for standard optimal processing and optimal processing with de-correlation. With quite small signal-to noise ratio (20), resolution increases more than 4 times. Higher signal-to-noise ratios provide more higher resolution