Ruonan LI

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EDUCATIONAL BACKGROUND

Xidian University School of Electronic Engineering **Xi'an, CHN**

Master of Information and Telecommunications Engineering *Sep 2019 - Present*

- Overall GPA: 3.8/4.0
- Relevant Courses: Engineering Optimization Methods (90), Matrix Theory (90.4), Array Signal Processing (86.3)
- University-level second-class scholarship (2019, 2021), University-level first-class scholarship (2020).

Xidian University Cambridge Summer Academic Programme **Cambridge, UK**

Study for Machine Learning and Neural Network about Two Weeks *Aug 2018*

Xidian University School of Electronic Engineering **Xi'an, CHN**

Bachelor of Information Countermesures Technology *Sep 2015 - Jul 2019*

- Overall GPA: 3.7/4.0
- Relevant Courses: Advanced Mathematics (91), Electromagnetic Propagation (94), Fundamentals of Circuit Analysis (90), Probability Theory and Mathematics Statistics (93), Field Theory and Complex Functions (90), Digital Circuits and Logic Design (93), Random Signal Analysis (94), Radar Principle (95), Principles of Communications (91), Microwaves Technology and Antennas (98).
- University-level second-class scholarship (2016, 2017, 2018), Outstanding graduate of the college (2019).

Publications

- Ruonan Li, Zhiwei Yang, et al. "Ship Target Micro-Doppler Features Extracted by Multi-Synchrosqueezing Transform and Inverse Radon Transform". (2021-CIE Radar Conference).
- Ruonan Li, Zhiwei Yang, et al. "Using A New Synchrosqueezing Method and Bernoulli Filter Extracting the Ship Target Micro-Doppler Feature" (2022 IET Radar Conference, Under Review).
- Ruonan Li, et al. "Extended Efficient Angular Chirp-Fourier Transform and Its Application to Hybrid Linear Frequency Modulation-Sinusoidal Frequency Modulation Signal" (Prepare to send to IEEE Signal Processing Letters).

RESEARCH EXPERIENCE

Refocusing Methods for Ship Target from Spaceborne Radar **Xi'an, CHN** *Project Leader Jun 2021 - Apr 2022*

- This project focuses on the defocused problems caused by marine targets with complex non-linear motion. Combing the targets six DOF motion features with the spaceborne radar observation model to establish the precise echo model.
- Aiming to the echo with high signal to noise ratio (SNR), study a new time frequency curve extracted method based on compensating the translation motion. The method combines the vertical synchrosqueezing transform with Bernoulli filter.
- For the low SNR signal, put forward a method using both the motion characteristics of rigid target and the image entropy minimum criterion for optimization constraints. The method concerns about differences between ship target and air plane, establishes an accurate echo model. A joint salient points rough estimation method is studied, which is data-driven, in order to speed up the coordinate rotation integration speed.

Spaceborne Radar Detects Space Target Simulation Software **Xi'an, CHN** *Project Leader Oct 2020 - May 2021*

- This project aims to solve the defocused SAR image which is caused by space target such as satellite. In order to analysis the high relative speed influence, a precise echo model-inner pulse motion which considering the offset caused by relative motion within single pulse is established. And the effects of the relative speed inner pulse and between pluses are analyzed.
- For the situation which not considering the range curve migration (RCM), because of the different resolution between range and frequency, using the engineering algorithm which contained keystone transform (KT) based chirp Fourier transform and maximum likelihood (ML) principle to find the parameters. For the situation which considering the RCM, using rough search joint range and frequency parameters to find the range of move parameters and accurate search based ML principle to obtain the estimated parameters.

Ground-Spaceborne Bistatic Radar Detects Target Simulation Software **Xi'an, CHN** *Project Leader Jun 2020 - Nov 2020*

- This project aims to process the defocused synthetic aperture radar (SAR) image which is caused by high speed and highly maneuvering single target. Establish the geometry model and the echo model to describe the exchange of position between bistatic radar and target. And to analysis the factors lead to range migration (RM) and Doppler frequency migration (DFM).
- For the situation which has only DFM, using the non-parameter method named phase gradient autofocus to estimate the parameters or the parameter method based on ML principle to estimate the parameters. For the situation which has RM and DFM, using general Radon Fourier transform search the parameters along the motion curve, or using the KT to compensate the RM and the ML principle to compensate the DFM.

SKILLS AND CERTIFICATES

- **Computer:** MATLAB, Python, C++, Origin, AutoCAD.
- **Languages:** Chinese (Native), English (IELTS 6)