Detecting LFM Parameters in Joint Communications and Radar Frequency Bands
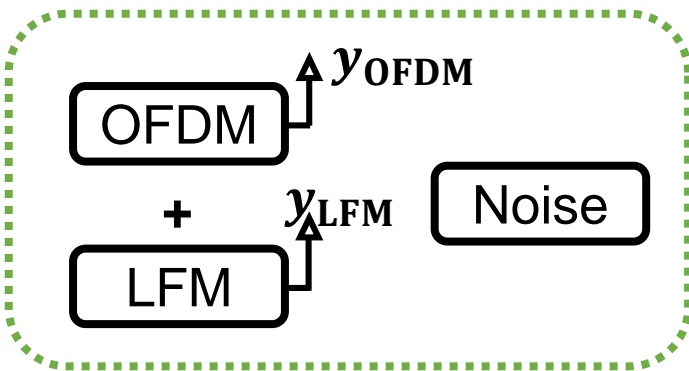
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Research Background:

- Scenario — joint communications and radar coexisting;
- Communication waveform — **Orthogonal Frequency Division Multiplexing (OFDM)**, the common communication signal ;
- Radar Waveform — **Linear Frequency Modulation (LFM)** waveform widely applied in defence;
- Goal — detecting LFM parameters.

Research Contents
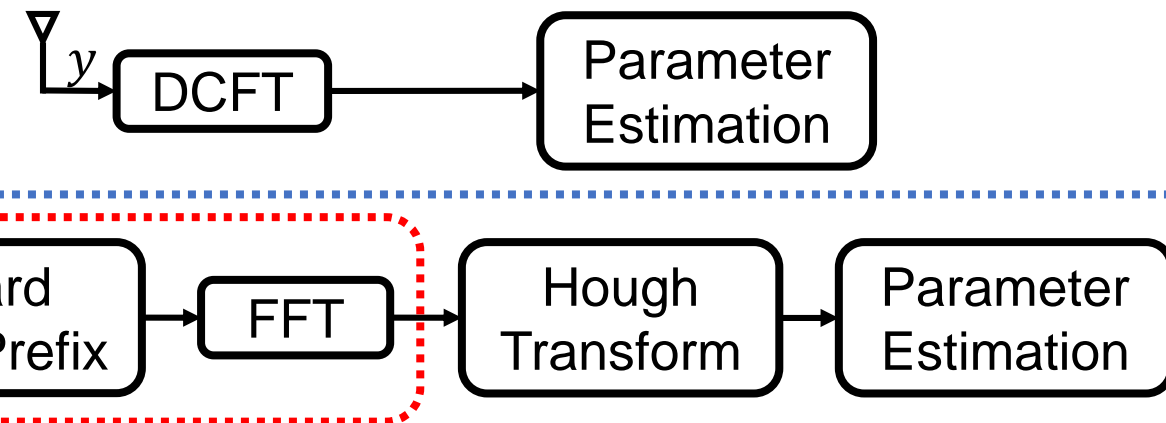
- Discussing traditional method — applying **Discrete Chirp Fourier Transform (DCFT)**:
- Proposing a new method — applying **Fast Fourier Transform (FFT)** and **Hough Transform**;
- Comparing the two above methods.

System Diagram

Traditional Method

Proposed Method

Transmitter Part   Channel

Receiver Part

Key Contributions

- able to lower hardware complexity by reusing the red dashed block that already exists in an OFDM receive;
- able to employ the proposed method in the above scenario;
- able to detect LFM parameters at a low level of error (1.47%).