Radar Based Target Detection and Classification

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Abstract:
In recent years, RADARs have begun to replace more sensors like cameras, ultrasonic devices, and infrared sensors used in common places in everyday life. As integrated circuit technology has advanced, the environmental robustness of radar technology has enabled small, inexpensive, short-range radars operating at frequencies ranging from a few GHz to hundreds of GHz (millimeter waves). As a result, RADAR has become a popular choice for many new applications, including patient monitoring, adaptive control of self-driving cars and drones, structure monitoring, airport security, and gesture recognition. Another recent area of interest is RADAR-based wildlife anti- poaching activities. The model's performance is assessed using the spectrogram obtained from a radar signature database of moving targets in a typical setting. The goal of this work is to discriminate between moving human and animal targets based on variation in range of red cells in the spectrogram. Observed results indicate that the model's classification accuracy depends on the length of continuous on target observation. The radar-based target detection and classification system used for border security measures and wildlife anti-poaching operations for animals like rhinos or elephants are both potential activities.

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