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Study on diagnosis by sound signal processing and applications of particle filter

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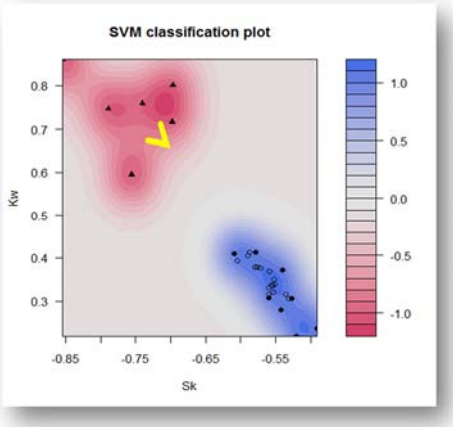
Keywords	Sound signal processing, Filter
Technical Support Skills	・State diagnosis of an apparatus based on sound signal processing ・Tracking of a moving target using the particle filter

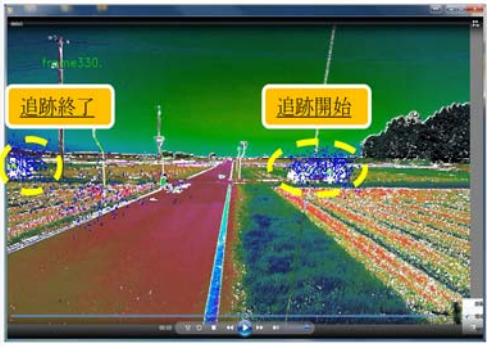
Research Contents

The abnormal diagnosis of a fan is inspected by an inspector of specialized sensory test. However, the inspector of sensory test needs many experiences. The diagnosis of the inspector changes by personal physical condition and environment around. Therefore a diagnosis not to depend on the experience is enabled if we can perform the classification of a normal fan and an abnormal fan objectively. In this study, I examine the diagnosis using the support vector machine which is effective for frequency analysis and classification problem as objective technique.

The technique to enable complicated movement or real-time processing is demanded in the field of computer vision every day. The particle filter may fail in the target detection without a problem in an initial condition. In this study, we proposed the combination of a static particle and a motion particle to detect a moving target statically in the particle filter. The proposed method using the static particle indicates to detect moving target statically.



Classification of the normal fan and the abnormal fan using support vector machine



Tracking of a vehicle using the particle filter

Available Facilities and Equipment

sound quality evaluation system Oscope2 (Ono Sokki)	
signal analysis system DS2000 (Ono Sokki)	
High Function Sound Level Meter LA-5560(Ono Sokki)	