Summary of SIP-adus Project (FY2016)

Name of the project	Development and evaluation of construction technology for driving pictures database
Responsible Organization	Japan Automobile Research Institute

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Object of the Project

This project aims to establish the pictures recognition database which contributes for advanced image recognition performance evaluation of automated driving system.

＜Activity＞
(1) Data processing
•Using driving pictures data collected in FY2015, extract the scene of necessary data and execute the tagging work. In addition, using driving environment scenes (27 scene classification), 40,000 pedestrian scenes and 4 millions pedestrian examples, which are the targets of project will be obtained.

(2) Basic technology development for database production basis
• Tagging technology development: Using single distance measurement technology, add the distance information to the objects. (Target accuracy: approx +/− 5%., minimum unit: 0.1m)
• Searching database: On the database structure of achievement in 2015FY, add the software of searching function and visualization function, and execute function evaluation.

(3) Evaluation of driving picture database
• At the 8 related organizations, the performance comparison evaluation of driving picture database and the evaluation of volume, quality and diversity of database are executed.

Project Summary

Below mentioned development targets were achieved.

(1) Data processing
• For all driving picture data, scene extraction work to extract picture data as tagging object and automatic tagging work with distance information were executed, and 63,983 scenes and 22,521,337 frames of tagging work were practiced, and the development targets were achieved.
• Scene classification was applied for the above results and classified 68 days out of 229 days mainly at urban district, downtown, tourist spot and cold region, and estimated the total of pedestrian picture scenes as 115,717. As a result, project target of 40,000 pedestrian scene obtaining was achieved. In addition, approx. 6.94 millions pedestrian examples are achieved against the project target of 4 millions pedestrian examples

(2) Basic technology development for database production
• Tagging technology development: Developed automatic tagging tool equipped with monocular distance measurement function and applied the evaluation and the development target was achieved.
• Searching database technology development: Development of the Function of visualization and searching were practiced and the function evaluation and the demonstration of research results were executed and the development targets were achieved.

(3) Evaluation of database
• Evaluation results: Evaluated to be effective as of evaluation database for recognition system of objects such as pedestrian and the development target was achieved.

Future plan

Improvements of the perfection of database and data application environment are expected, such as searching function of near-miss pictures data and scene of hard-to-recognize image, reinforcement of desired scene data.

(1) Overall evaluation of driving picture database
• Performance comparison evaluation with picture data such as near-miss scene using simulated city road environment and performance evaluation of picture data image recognition which has differences at the brightness change scene such as the backlighting and at the severely affected scene from road reflection at the rain using automated driving evaluation site will be executed.
• As a simulation evaluation using computer graphics processing technology, study the potential of simulation evaluation such as picture data with image processing and real image data are used as input data and if similar detection results will be obtained

(2) Driving picture database release (sample version)
• Matching between the research results of safety design for the peripheral environment recognition technology which is practiced in the other project and the results from driving picture database are planned and release sample version will be produced and distributed.