71%

86%

1

[1]

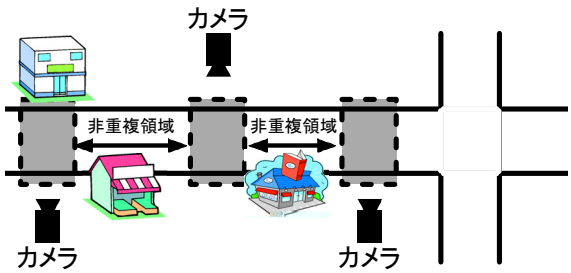
[2]

2

[3]

[4] MRF

1



1.

[5]

[6]

2.

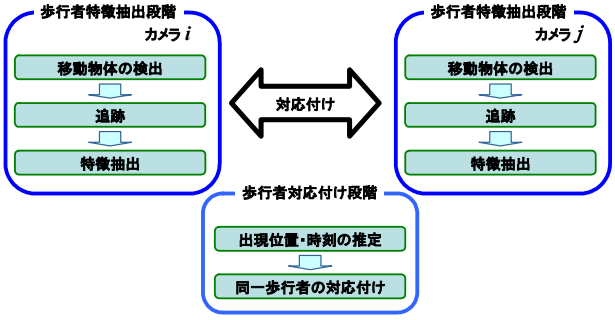
2.1

1

2

2 i j

2



2.

1

3

2.2

[7]

3

(x, y)

$\mathbf{v} = (v_x, v_y)$

3.

2.2.1

Step 1.

Step 2.

Step 3.

2.2.2

CONDENSATION

[7] Z ($\mathbf{z}_1$ … $\mathbf{z}$)

$\mathbf{x}_t$

$p(\mathbf{x}_t \mid Z_{t-1})$ t-1

$p(\mathbf{x}_{t-1} \mid Z_{t-1})$ t-1 t

$p(\mathbf{x}_t \mid \mathbf{x}_{t-1})$ (1)

$$p(\mathbf{x}_t \mid Z_{t-1}) = \int p(\mathbf{x}_t \mid \mathbf{x}_{t-1}) p(\mathbf{x}_{t-1} \mid Z_{t-1}) d\mathbf{x}_{t-1} \quad (1)$$

t

(2)

$$p(\mathbf{x}_t \mid Z_t) \propto p(\mathbf{z}_t \mid \mathbf{x}_t) p(\mathbf{x}_t \mid Z_{t-1}) \quad (2)$$

t

$p(\mathbf{x}_t \mid Z_t)$

2.3

y

6

$$\begin{cases} t_{next} = t_{now} + D/|\mathbf{v}| + \mathbf{N}(\sigma_{|\mathbf{v}|}) \\ y_{next} = \mathbf{N}(\sigma_y) + C \end{cases} \quad (6)$$

t_{now}

t_{next}

D y_{next}

$\sigma_{|\mathbf{v}|}$

C σ_y y

3.

3.1

2

4

5

1 2

10[m]

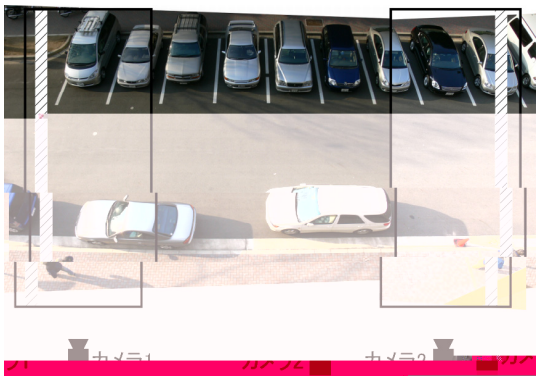
2

10 8

A.M. 10:00 P.M. 5:00

CCD-V17 (SANWA)

10 frames/sec



5.

120 × 320 pixels

1 (600 frame)

100

(4) σ_x σ_y

10 pixels (0.4 m)

396 (36 ×

11)

α (5) 10

(7)

$$S_{HM} = \sum_{i=1}^{I} \min(H_i, M_i) \quad (7)$$

H M

S_{HM} 0 1

3.2

2 177

1 71%

3

1

6 a 2

1

3

6 b

1

	125
	1
	51
	177

(a)

(b)

6.

3.3

2

7

35

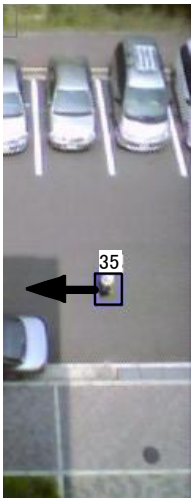
2

	108
	11
	5
	1
	125

(8) 1 45

2

1



2

7. (

)

1

2

8. (2 45

7

)

9 a

23

9 b 256

4.

2

21 COE

MIST
(http://mist.s.m.is.nagoya-u.ac.jp/)

[1] , , , , , “ ”, CVIM2004–142, Jan. 2004.

[2] , , , , , , , “2 ”, SIG-ITS2000, Mar. 2000.

[3] , , , , , “ ”, PRMU2001–241, Feb. 2002.

[4] , , , , “ Markov Random Field ”, (D-II), Vol.J83-D-II, No.12, pp.2597–2609, Dec. 2000.

[5] , , , “ ”, (MIRU)2006 , pp.1213–1218, July 2006

[6] “ ” PRMU2004–186, Feb. 2005.

[7] Michael Isard and Andrew Blake, “CONDENSATION Conditional Density Propagation for Visual Tracking”, International Journal of Computer Vision, Vol.29, No.1, pp.5–28, Aug. 1998.

2677 2550

23

23

1 2

(a)

5095 4963

1 2

(b)

9.