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81%

85%

Matching of Human Trajectories between Non-Overlapping Cameras

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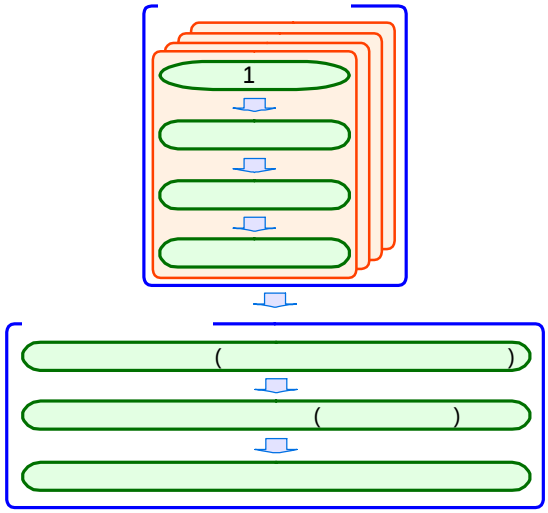
Abstract In this paper, we propose a method for corresponding human trajectories taken from multiple non-overlapping cameras by extracting human features, for wide-area human flow analysis system. Features of pedestrians are extracted robustly from trajectories tracked by Particle Filter. By combining the extracted features, human trajectories are high accurac

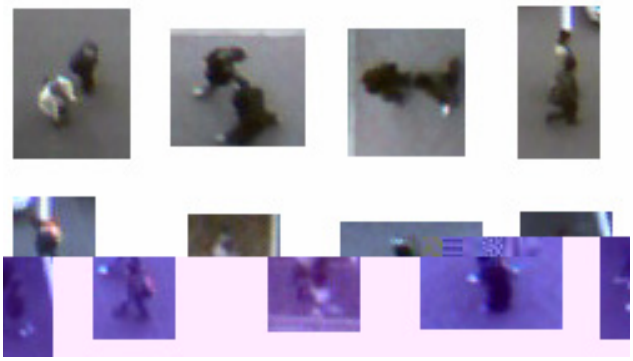
[4]



2.

2

[5]



2

3

4 5

3.

2.

2.1. 手法の概略

( ) 1

(3)

2

(pixel)

(pixel/frame)

2.2. 人物軌跡特徴の抽出

2.2.1.

Step 1.

Step 2.

Step 3.

2.2.2.

[5]

t $\mathbf{x}_t$

χ_t (1)

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

$\{x,y\}$ t

(2)

$$\mathbf{x}_t = \{x_t, y_t\} \quad (2)$$

3

t 1

t 1

N

t

(3)

$$\mathbf{x}_t = \mathbf{x}_{t-1} + \mathbf{dx}_{t-1} + \mathbf{N}(\sigma) \quad (3)$$

dx_{t-1} dy_{t-1} t 1

N(σ) 0 σ_x σ_y

2.2.3.

(4)

IIR [6]

4.

2.2.4.

2.3. 人物軌跡の対応付け

2

Step 1.

Step 2.

10

6 ( )

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

5 1

5 1 4 CCD-V17 (SANWA)

10frames/sec

320 × 240 pixels

500

2 (3) 10 pixels

(5) 64 (RGB 4)

Pattern 1. 1 2 Bhattacharyya (4)

Pattern 2. 2 1

Pattern 3. 1

Pattern 4. 2

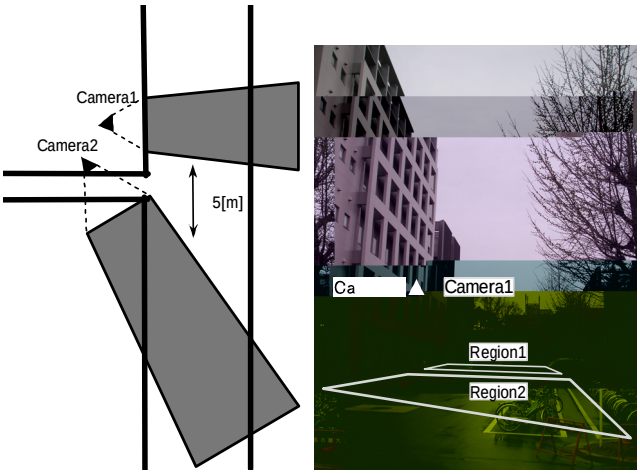
$$\rho = \sum_{u=1}^{m} \sqrt{p_u q_u} \qquad (4)$$

Bhattacharyya

p q

m

2



3 4

3.

3.1. 実験条件

6 (a)

1

2

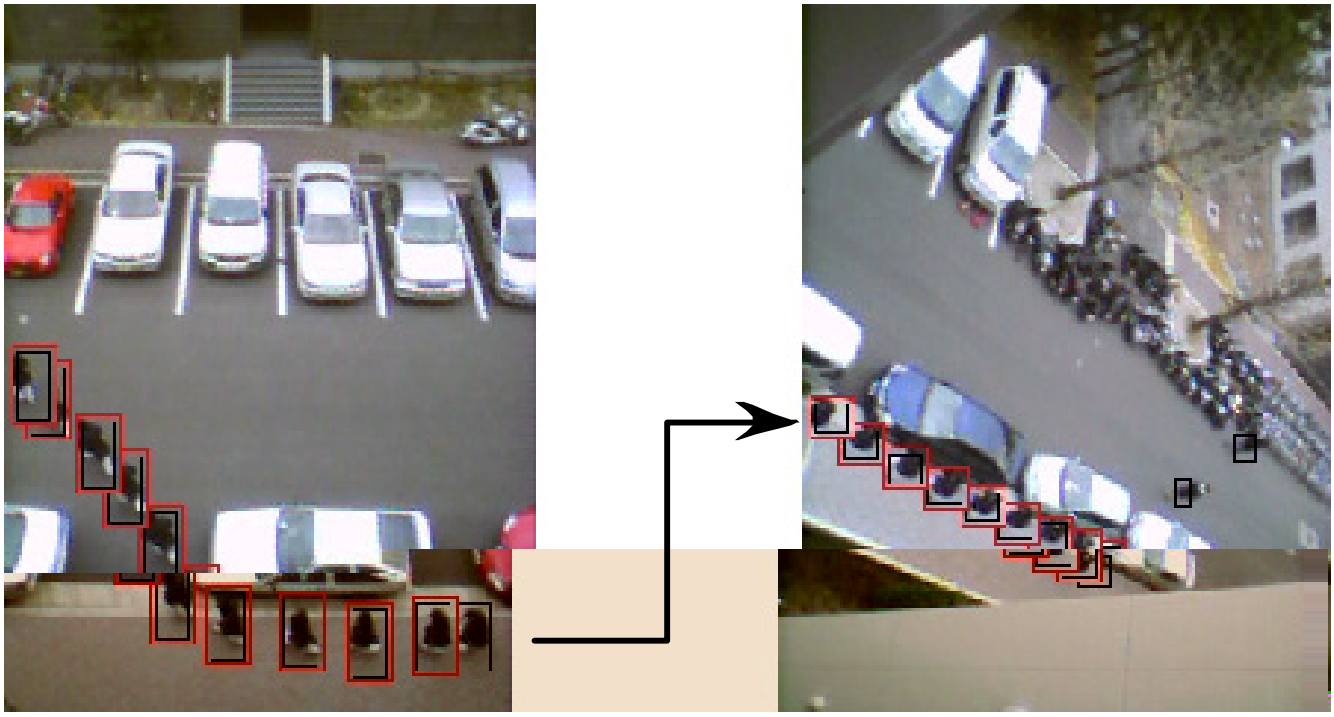
(Pattern 3,

) 5[m]

6 (b)

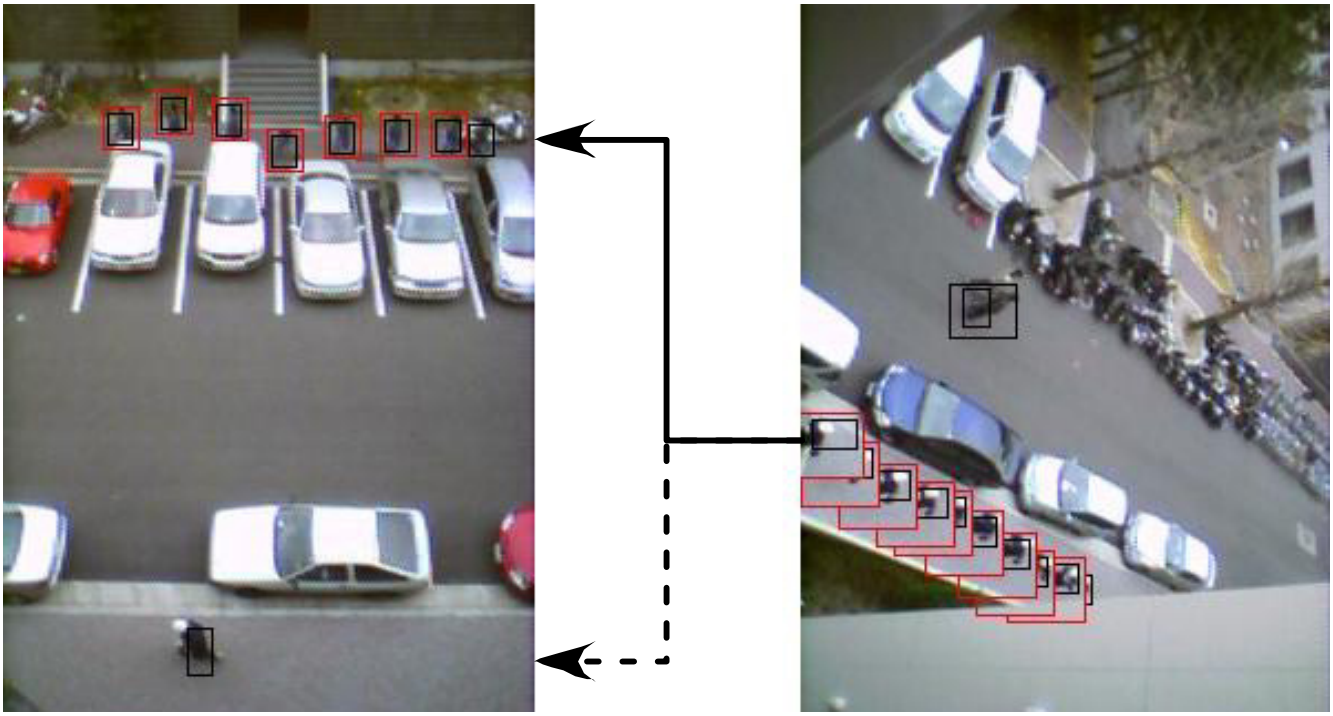
2

1 2



(a) 1 (b) 2

8.



(a) 1 (b) 2

9.

3.2. 領域内での人物軌跡特徴抽出結果

1

1 87 2 81

94

15

(7 (a)) 2 1
1 2

(7 (b))

1.

1	87	73 (84%)
2	94	73 (77%)
	181	146 (81%)

3.3. 領域間の人物軌跡対応付け結果

2

1 2 1 2
1 2
1
2

85
8
8 (a) 1 8 (b)
2

9
9 8 (a)
1 (b) 2
(a) (b)

2.

1	1 2	28	24 (86%)
2	2 1	17	15 (88%)
3	1	9	6 (67%)
4	2	15	14 (94%)

4.

HSV

21 COE

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

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