

# A Generation Method of Representative Human Models at the Boundary Area of a Designated Accommodation Percentage

## ABSTRACT

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Keyword:

### 1.

가

(representative human

models, RHMs)

가



(a)



(b)

1.

가

1

(You et al., 1997)

2

2005)

가

(boundary approach)

al. (1987) 2.a

( : 5%ile, 95%ile)

(1997)

, Bittner et

, Kim & Whang

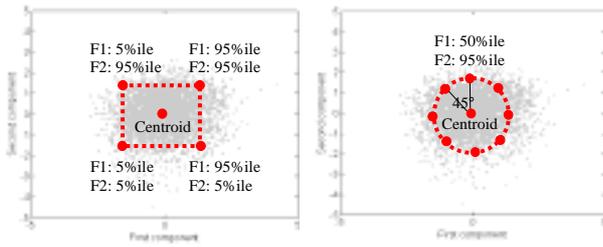
al. (1993)

2.b

, Meindl et

( :

45°)



(a) Bittner et al. (1987)      (b) Meindl et al. (1993)

2.

(normalized squared distance)

$$(2.1) \quad \dots$$

$$(2.2) \quad \dots$$

2.1

(information distillation)

80%      20%      (Meunier, 1998).

(1998)      Meunier 90%

39%      가

(Mahalanobis distance)

1      (Chi-square distribution)      (Jonson & Wichern, 1988).

100p% (      p = 0 ~ 1)

1       $\chi_n^2$  (1 - p) (n:      )      , 1988      US Army (182 cm, 60 kg) (171 cm, 90 kg) (175.6 cm, 78.5 kg) 6.28      3.31      ,      90% 4.61      (171 cm, 90 kg) (182 cm, 60 kg) (Ryu et al., 2004).

( : 89% ~ 91%)

$$(S - \mu_s \quad W - \mu_w) \begin{pmatrix} \sigma_s^2 & \sigma_{sw} \\ \sigma_{sw} & \sigma_w^2 \end{pmatrix}^{-1} \begin{pmatrix} S - \mu_s \\ W - \mu_w \end{pmatrix} \leq \chi_2^2(1-p) \quad (1)$$

, S =      , W =      , p =

3      % ( : 90 % ± 1 %)      가

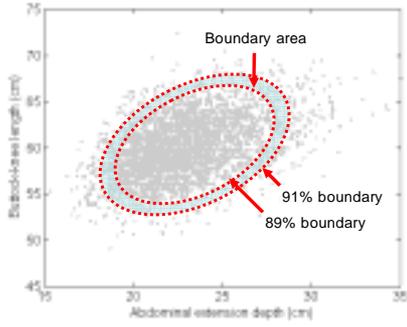
가

2

2.

3      ,      90%

89%      91%



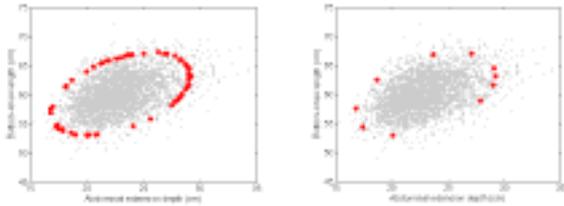
3.

2.2

가

4.a

4.b



(a)

(b)

4.

(1988 US Army

)

3.

3.1

10 US Army

가

BSR/HFES100(2002)

10 가

3,987 ( : 1,774; : 2,213)

US Army

(Gordon, 1988)

가

(2,982 )

가

(1,000 )

3.2

2

(

)

90%

가

$\pm 1\%$

(2,982

60

)

가

(2

)

89% 91%

15.65

16.36

가

clustering

K-mean

90%

가

가

34

3.3

가

5 )

90%

34

, Meindl et al.(1993), Bittner et al.(1987), Kim & Whang (1997)

20, 9, 9

3

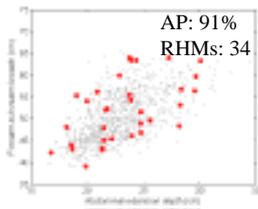
al.(1987)

Kim & Whang (1997)

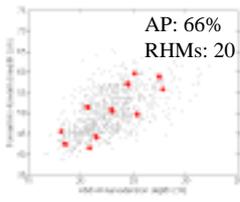
8 (2<sup>3</sup>)

(1 )

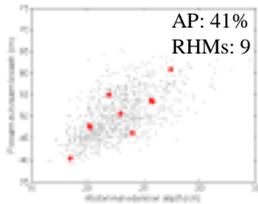
9



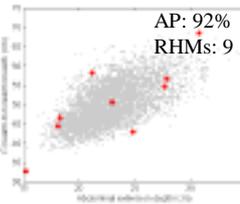
(a)



(b) Meindl et al.



(c) Bittner et al.



(d) Kim & Whang

5.

(AP: , RHMs: )

91%

Kim & Whang (1997)

91% 92%

, Meindl et al. (1993) Bittner et

al. (1987) 66% 41%

Kim & Whang (1997)

Kim & Whang (1997)

5.d

4.

가

가

(2005). Digital human simulation overhead crane

가

2005

8

, 57-60.

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