

† † † * †
† 464-8601 1
‡ 500-8288 1-38
101-8430 2-1-2
E-mail: † {kuai, ide, murase}@murase.m.is.nagoya-u.ac.jp
‡ ttakahashi@gifu.shotoku.ac.jp

50% 70%

Associating Cooking Recipe with Cooking Video by Motion Analysis

KUAI Cheng Ying[†] Tomokazu TAKAHASHI[‡] Ichiro IDE^{†*} and Hiroshi MURASE[†]

[†] Graduate School of Information Science Nagoya University

1 Furo-cho Chikusa-ku Nagoya-shi Aichi 464-8601 Japan

[‡] Faculty of Economics and Information Gifu Shotoku Gakuen University

1-38 Nakauzura Gifu-shi Gifu 500-8288 Japan

National Institute of Informatics 2-1-2 Hitotsubashi Chiyoda-ku Tokyo 101-8430 Japan

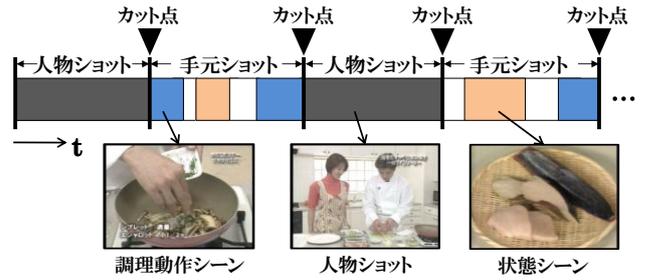
E-mail: † {kuai, ide, murase}@murase.m.is.nagoya-u.ac.jp

‡ ttakahashi@gifu.shotoku.ac.jp

Abstract We are considering providing people with visual explanations of cooking motions as a cooking support service, and therefore aiming at building a video database of cooking motions. In this paper, we propose a method for associating cooking recipe text with cooking video by integrating analysis of text and image information. An experiment was performed on cooking video broadcast in Japan with their recipes. The results demonstrated the proposed method can achieve a success rate of approximately 70% in associating motions to video segments, and the capability of building a cooking motion video database was confirmed.

Keyword cooking recipe cooking video motion analysis cooking motion video database

1.



4

1:

5

発注時刻	音声書き下しテキスト
[09:30:27]	しゅん「はいでねお母さん」2日目です。
[09:30:35]	よろしくお願ひします。
[09:30:41]	長芋さつまいもとあまりフレンチに焼わ
[09:30:49]	気になりますね。まず料理を見て下さい。
[09:30:59]	山芋をすりおろして卵に入れた角切りを
[09:31:07]	秋らしくきのこもたっぷり入れました。
[09:31:11]	山芋とオムレツの取り合わせ。
[09:31:15]	発想の原点は好評な事です。
[09:31:25]	そしてあと2つあります。
[09:31:31]	いつもすりおろして使うから
[09:31:37]	シヤキヤキとした歯ごたえを食べて頂きたい
[09:31:43]	湖のキャベツ「とんぶり」なんです。
[09:31:47]	かもしてもう1つ。糖内でですね。そうです。

2:

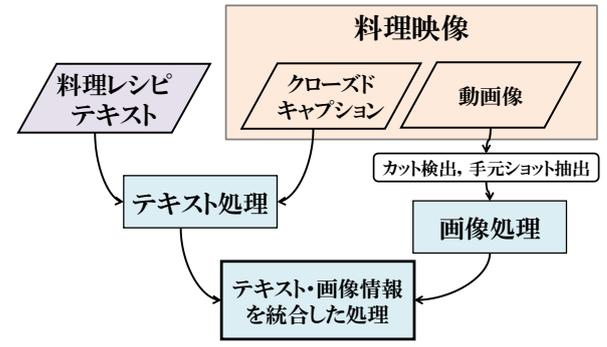
CC

2

3

4

5



3:

2.
2.1.

2.3.

1

2

1

2

2.2.

(CC)

2

CC; Closed Caption

3.

3.1.

CC

3

CC

1:

1-1		
1-2		
2		
3		

1

- 1. 1
- 2. 1
- 3. 1
- 4. 1

1

CC

CC

CC

3

- 1. :
- 2. :

- 3. : 1. 2.

1.

2

- 1-1. :
- 1-2. :

- 1.
- 2.
- 3. 1

1

CC

3.2. CC

CC

CC

1.

CC

MeCab¹

2.

CC

/

/

CC

1

1

¹ <http://mecab.sourceforge.net/>

“

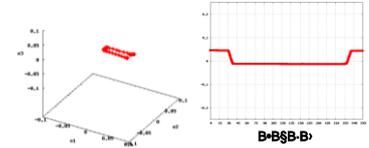
”

3.3.

3.3.1.



(a)



(b)



(c)

4: : :

3
1 3
6
4
4
4
m r

$$\begin{cases} g(t) - g(t+1) \geq \theta_1, \\ g(t+1) - g(t+2) \geq \theta_2, \\ g(t-1) - g(t-2) \geq \theta_2. \end{cases}$$

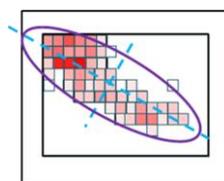
$g(t)$ t

5:

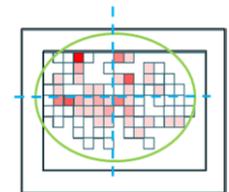
2

$$\begin{cases} (m \geq \theta_m) \\ (m < \theta_m \text{ and } \Delta r \leq \theta_{\Delta r}) \\ (m < \theta_m \text{ and } \Delta r > \theta_{\Delta r}) \end{cases}$$

r m m r



(a)



(b)

6:

3.3.2.

7

6b

2

$$\begin{cases} ((\lambda_1 - \lambda_2) \geq \theta_\lambda) \\ () \end{cases}$$

5

3.4.

6a

6b

2

1 2
6

6a

4.

4.1.