Slide 1
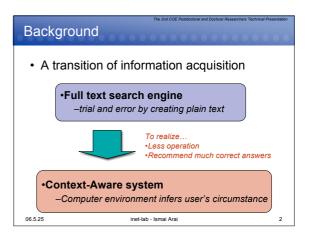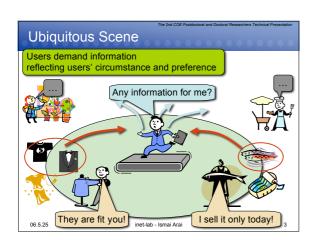
Design and Evaluation of
Items Recommendation mechanism
on a distributed agents environment

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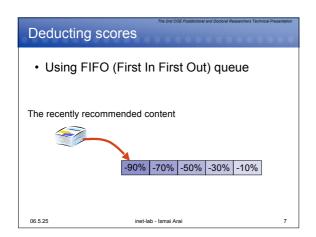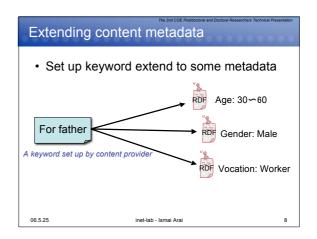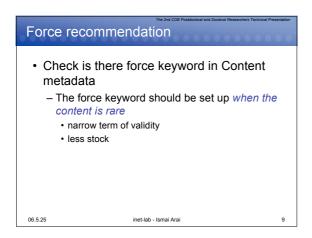
Slide 2

Background

- A transition of information acquisition

  •**Full text search engine**
  –*trial and error by creating plain text*

  To realize…
  •*Less operation*
  •*Recommend much correct answers*

  •**Context-Aware system**
  –*Computer environment infers user's circumstance*

Slide 3

Ubiquitous Scene

Users demand information
reflecting users' circumstance and preference

Any information for me?

They are fit you!

I sell it only today!

Slide 4

Requirements

- Users
  - Privacy safe
  - Reflecting circumstance
  - Reflecting preference
  - No repetition of recommending a same content
- Contents providers
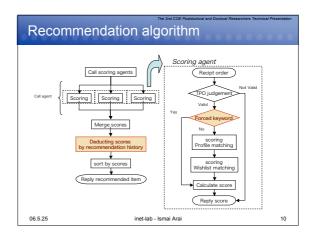 - No labor for create contents
  - Forced recommend

Slide 5

Related works

1. A Context-Aware Personal Agent (Hattori '02)
   - Proposing best algorithm for mobile agent in a Context-Aware system
2. Knowledge-Filtering Agent (Takenouchi '05)
   - Recommending information by TPO+P (Time, Position, Ocassion + Personalization) match making

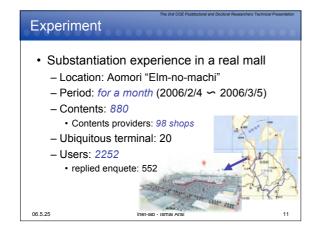|	1	2
Privacy safe	△	○
circumstance	○	○
preference	△	○
no repetition	X	X
no labor	X	X
forced recommendation	X	X

Slide 6

Main suggestion

- Deducting scores by referring recommendation history
  - solve repetition problem
- Extending content metadata from few keyword
  - solve labor problem
- Setting up forced keyword
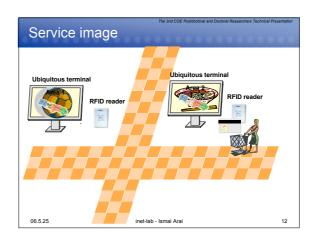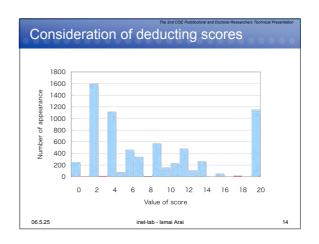 - solve providers' requirement

Slide 7

Deducting scores

- Using FIFO (First In First Out) queue

The recently recommended content

-90%	-70%	-50%	-30%	-10%

Slide 8

Extending content metadata

- Set up keyword extend to some metadata

For father

A keyword set up by content provider

- RDF — Age: 30〜60
- RDF — Gender: Male
- RDF — Vocation: Worker

Slide 9

Force recommendation

- Check is there force keyword in Content metadata
  - The force keyword should be set up *when the content is rare*
    - narrow term of validity
    - less stock

Slide 10

Recommendation algorithm

Slide 11

Experiment

- Substantiation experience in a real mall
  - Location: Aomori "Elm-no-machi"
  - Period: *for a month* (2006/2/4 〜 2006/3/5)
  - Contents: *880*
    - Contents providers: *98 shops*
  - Ubiquitous terminal: 20
  - Users: *2252*
    - replied enquete: 552

Slide 12

Service image

Ubiquitous terminal — Area 1 — RFID reader
Ubiquitous terminal — Area 2 — RFID reader

Display image

Recommended item having higher score. Refreshing each 15 minutes.

Showing static contents. Map

Show detail

Other recommended items

Add it to Wishlist

FRAGRANCE AVENUE
GUCCI [rush2]

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Consideration of deducting scores

Number of appearance (y-axis: 0–1800)
Value of score (x-axis: 0–20)

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Consideration of extending content metadata

labor 12%
permissible 34%
a little bit labor 54%

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Consideration of forced recommendation

Number of force keywords (y-axis: 0–100)
x-axis: 2/4, 2/11, 2/18, 2/25, 3/4

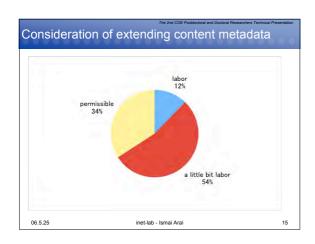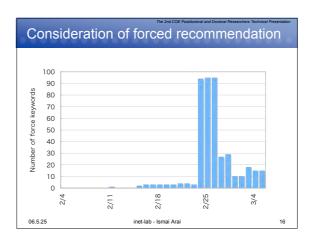06.5.25 — inet-lab - Ismai Arai — 16

Summary

- In ubiquitous environment
  - Users demands information reflecting users' circumstance and preference
- Requirements in each positions
  - Users side
  - Contents providers side
- Suggesting three mechanisms
  - Deducting scores
  - Extending metadata
  - Forced recommendation

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