Location Based Social Network Services Employing Student Cards for University

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Background

- Social Networking Services
  - Facebook, mixi, etc...
  - Support not only communications but also make new friends that have common interests.

- Lack of communication skills in the real world.
  - It is difficult for some students to make friends at the university.
  - Some studies that encourage communication between students by SNS.
Features

- Nitwho: Location-based SNS for Students
- Estimate *location of students* by using authentication records.
  - Student card mounted on IC
  - Campus pay, Attendance system.
- Support PCs and *mobile phones*.
  - Users can access it from classrooms or outdoors.
- Support communications *in real world*
  - Users can find the locations of friends in the vicinity anytime and any where.
Student Card Authentication

- Student Card
  - Contact type IC
  - Non-contact type IC
  - Magnetic stripe
- Student card supports...
  - Attendance systems.
  - Campus pay system.
  - Security gate system at libraries.
  - Login system of educational computers.
- By analyzing the records of student card authentications, we can acquire information regarding when and where and who are located.
Attendance system

- Record of attendance
  - All classes in NIT
  - All classrooms have attendance reader.
  - Non-contact IC
  - at the beginning time and end time of each class
- Web interface
Login to PC

- Educational PC
  - Login Procedure
  - Desktop PC
  - Windows Vista

- Authentication
  - By Contact IC

- Records
  - Timestamp
  - User ID
  - IP address → Place
Estimation of location

- **IP address method**
  - Records of educational computer
  - Based on a dictionary that associates the IP addresses of computers with the names of rooms.
  - User IDs, IP addresses, timestamps of all educational computers every 10 min
Estimation of location

- Attendance method
  - Based on the attendance records accumulated by the attendance system.
  - Since students can use the attendance system for all classes, we expect that this method can determine the locations of students with higher frequency.
List of friends with places

- List of friends
  - Name, Place, Elapsed time, and Message of friends.
  - Students can find near friends.

<table>
<thead>
<tr>
<th>Name</th>
<th>Place</th>
<th>Elapsed time</th>
<th>Message</th>
</tr>
</thead>
<tbody>
<tr>
<td>御器所 次郎</td>
<td>M5 教室</td>
<td>3分前</td>
<td>勉強中</td>
</tr>
<tr>
<td>基盤 三郎</td>
<td>サテライト教室</td>
<td>5分前</td>
<td>周末なので遊びましょう</td>
</tr>
<tr>
<td>情報 四郎</td>
<td>サークル室</td>
<td>25分前</td>
<td>宿題が分からない。助けて</td>
</tr>
<tr>
<td>名工 花子</td>
<td>大学会館演習室 [x001dke]</td>
<td>35分前</td>
<td>情報技術が分からない</td>
</tr>
<tr>
<td>愛知 奈々子</td>
<td>サテライト3 [x01sat3]</td>
<td>1時間20分前</td>
<td>食欲の秋。</td>
</tr>
</tbody>
</table>
Twitter-like chat with places

- Twitter-like chat
  - Chatting with friends
  - Name, Place, Elapsed time, Message

![Twitter-like chat interface with columns for Name, Place, Elapsed time, and Message]
Experiment

- Comparing two methods
  - IP address method
  - attendance method

- Targets
  - All first-year students(1096 students)
  - One day on June, 2009.
Result of acquiring locations

- IP address method
  - Most users don’t use computer everyday.
  - 0.38 accesses per day
- Attendance method
  - Most users use everyday.
  - 5.5 accesses per day

Attendance method can acquire the locations of students with 10.8 times higher frequency than IP address method.
More number of users access Nitwho from PCs than mobile phones.

However, core users access from mobile phones than PC.

This network shows that friendship relations are developed as in the case of conventional SNS.
Questionnaire Result

- **Target**
  - 40 users that use Nitwho often.
  - Obtain valid response from 8 users.

- **Result**
  - Security suggests that students are quite comfortable with providing their location information to friends.
  - Two users answered that they found the truant students.
  - \( \rightarrow \) Nitwho is effective to share and solve the problem concerning the truancy of friends voluntarily.
Conclusion

- Location-based social network service.
  - Services for Information Technology Center of NIT.
  - We have made available the proposed system for more than a year in NIT

- Acquiring locations of students
  - *Attendance method* can acquire locations with 10.8 times higher frequency than *IP address method*. 
Thank you for your attention.