Session III

Building the “Tsuda Model”
- Cross Generational Networking
and
Integration of Science with Arts and Humanities -

Prof. Dr. Eng. Akihisa KODATE
Director, Center for Women in Research
Tsuda College

20/9/2014
About Tsuda College
Established in 1900 by Umeko Tsuda
Located in Sendagaya and Kodaira, Tokyo
Womens’ “College” (Total approx. 2600 students)

- 4 Departments under the Faculty of Liberal Arts
  - Department of English (245 × 4)
  - Department of International Relations (245 × 4)
  - Department of Computer Science (45 × 4)
  - Department of Mathematics (45 × 4)

- 3 Graduate programs
  - Graduate program in Language and Literature
  - Graduate school of International and Cultural Studies
  - Graduate Program in Mathematics and Computer Science
The Nobel Prize in Physiology or Medicine 1933

"for his discoveries concerning the role played by the chromosome in heredity"

The Orientation of the Frog’s Egg.

By

T. H. Morgan, Ph.D.,
Associate Professor of Biology, Bryn Mawr College;

AND

Umé Tsuda,
Teacher in the Peeress’ School, Tokio, Japan.

With Plates 24 and 25.

I.
The classical experiments of Pflüger on the segmenting frog’s egg, and the important conclusions drawn by Roux
"Winter Age"

In US, 2 out of Seven Sisters (Barnard College, Bryn Mawr College, Mount Holyoke College, Radcliffe College, Smith College, Vassar College, and Wellesley College) are no longer women’s colleges.

In Japan, 77 of the total 782 universities in Japan (2013), decrease of 20% since 1996, mainly changing to coeducation.

Source: Mukogawa Women’s University Institute for Education
Trends in 18-year-old population and the number of universities and women's college

Source: Mukogawa Women's University Institute for Education
Trends and gender ratio of four-year college students

Source: Mukogawa Women’s University Institute for Education
Trends in the number of female students by major field

- Diversification of major field
- Decrease of the rate of humanity major
- Low ratio of natural science major (1.9%) and engineering major (4.0%)

Source: Mukogawa Women’s University Institute for Education
Trends in Employment rate, Enrollment rate to graduate school and the number of university graduates

Higher Employment rate for female students since 2000

Lower Enrollment rate to graduate school for female students

Source: Mukogawa Women’s University Institute for Education
History of Science Education at Tsuda

1949  Launch of Dept. of Mathematics
1965  Start of Computer Science lectures
1985  Connection to JUNET (Japan inter-Universities NETwork → The INTERNET)
1991  Launch of Computer Science Course
1996  Rename to Dept. of Mathematics and Computer Science
2006  Division into Dept. of Mathematics and Dept. of Computer Science
2008  Launch of Center for Women in Research
Female Researchers in ICT Field in Japan

Female Member Ratio of academic society
- IPSJ (Information Processing Society of Japan): 5% (total member: 19,000)
- IEICE (Institute of Electronics, Information and Communication Engineers): 4% (total member: 27,000)

Forum on Information Technology 2014 (FIT2014)
- September 3 – 5, 2014, Tsukuba University
- Hosted by Information and System Society, Human Communication Group of IEICE and IPSJ
- Total Number of Presentations: 501
- Presentation by Female Researchers: 40
Examples of Research Papers

- A Data Compression Method for Doubling Data Transmission Rate
- Material Design System Using Computational Science and Data Mining
- Analysis of Time-Series changes of Head Posture for Estimation of Driver's States
- Coordinate Recommendation Using Difference Set to Change Impression
- Step-wise Recommendation of Travel Points Meeting Latent Preference, Requirement, and Purpose
Examples of Research Papers

 Ontology Construction for Location-Based Social Networks

 Sentiment analysis of tweets focusing on the position of polarity words and on the emphasized and de-emphasized expressions

 User trends analysis on Twitter by change detection method based on multinomial distribution

 System for Scoring Skin Texture and Fine Wrinkles using Smartphone

 A Study on the Transfiguration of the Perception and Behavior to having a Baby for Women Using Android Implementation of an Application for Development.
Problems are everywhere

A. High School
B. University Undergraduate
C. Graduate School students
D. Researchers

ICT Major
Supporting Activities for Female Researchers at Tsuda College since 2008

Ministry of Education, Culture, Sports, Science and Technology
Special Coordination Fund for Promoting Science and Technology, FY2008
Supporting Activities for Female Researchers

Tsuda College

Supporting Women in Research through Cross-Generational Networking
and Integration of Sciences with the Arts and Humanities
Supporting Activities for Female Researchers at Tsuda College since 2008

Seven Goals

1. Ensure that no woman’s research career has to be discontinued as a result of childbirth, parenting, or elder care responsibilities

2. Increase the percentage of students from the Department of Computer Science who wish to continue on to graduate-level study

3. Encourage undergraduate students in non-science programs to enter graduate programs in science-related fields

4. Expand the proportion of undergraduate and graduate students going on to specialist careers in ICT (information and communication technology) after graduation

5. Increase the number of academic conference presentations by undergraduate and graduate students to at least ten per year

6. Bring the proportion of women faculty members in science-based departments as close as possible to 33.3 percent

7. Use symposia, workshops, and other events to publicize the potential for active involvement by women researchers in ICT to audiences both inside and outside the College

☆: Achieved!
Supporting Activities for Female Researchers at Tsuda College since 2008

Implementation
Supporting Activities for Female Researchers at Tsuda College since 2008

Functions of the new Center for Women in Research

Providing an excellent research-support environment
- Further improving childcare services
- Establishing systems to allow employees to work from home
- Making arrangements for substitute personnel and research support staff
- Establishing a mentor system

Promoting programs for integration of sciences with the arts and humanities
- Introducing lecture subjects in science fields for arts and humanities students
- Actively promoting interdisciplinary research
- Using role models
- Cultivating researchers capable of active participation on the international stage

Implementation of cross-generational networking programs
- Junior/senior high school students: Assisting with events
- College students: Tutoring
- Graduate students: Mentoring
- Researchers: Research interns
Grace Hopper Celebration of Women in Computing (USA)

- GHC Conference
  - “the world’s largest technical conference for women in computing” (over 4,750 people from 53 countries in 2013)
  - “Co-founded by Dr. Anita Borg and Dr. Telle Whitney in 1994 and inspired by the legacy of Admiral Grace Murray Hopper
  - Hosted by Anita Borg Institute, designed to bring the research and career interests of women in computing to the forefront.
- Exchange with Anita Borg Institute
  - Invited key persons
  - Regular Participation in the GHC conference

GHC2009

GHC2011 (Google Booth)

20/9/2014
Launch of a special diploma degree program
- teaching specialised knowledge in computer science (informatics)
- methodically and didactically oriented on the demands of female students
- international

Start of the degree programme: October 2005

Semesters of study: 7
- refined monoeducation
- practice-oriented
- international
- blended learning

Started Student Exchange Program since 2010

Source: Prof. Vatterrott and Prof. Viereck (Univ. of Applied Science, Bremen)
Mentor Café

#1: Necessary things to make more than 2 disciplines
Dr. Ai Kawazoe (CWR, Tsuda College)

#2: Study Abroad in the US Graduate School
Dr. Satomi Yamamoto (CWR, Tsuda College)

#3: Reasons to Continue Research
Dr. Manabu Sugiura (CWR, Tsuda College)

#4: Reasons why I chose Research Position
Ms. Chihiro Yamamoto (NTT Laboratories)

#5: Merit and Demerit of Adult Admission to Graduate School
Dr. Junko Kubo (CWR, Tsuda College)

#6: As a graduate from Tsuda College – Path to Researcher –
Ms. Akiko Ogata (Graduate School of University of Tokyo)
Next Generation
Female Researchers

3 Peer Reviewed Papers in 2014

A Privacy-enhanced Access Log Management Mechanism in SSO Systems from Nominative Signatures

Sanami Nakagawa\textsuperscript{1,2}, Keita Emura\textsuperscript{2}, Goichiro Hanako\textsuperscript{2}, Akihisa Kodate\textsuperscript{1}, Takashi Nishide\textsuperscript{1,3}, Eiji Okamoto\textsuperscript{1} and Yusuke Sakai\textsuperscript{1}

\textsuperscript{1}University of Tsukuba, Japan
\textsuperscript{2}National Institute of Information and Communications Technology, Japan
\textsuperscript{3}National Institute of Advanced Industrial Science and Technology, Japan

Abstract—In online services, e.g., online shopping, a service provider (SP) manages access logs containing customers' buying histories. Therefore, user's personal information, e.g., their hobbies and divisions, is revealed from the exposed logs if each customer can be linked. In fact, such information exposure has occurred due to the popularization of online services. To cope with this problem, SPs may only have to delete access logs, but then no illegitimate users will be traced from the logs. For example, even if evidence is left at the scene of a crime, no criminal is traced from the corresponding buying history obtained from access logs. Therefore, a method has to be developed to manage access logs suitably.

B. Our Contribution
In this paper, we propose a privacy-enhanced log management mechanism for SSO systems, where

- No user information is revealed even if logs are exposed, but
- Illegitimate users can be traced when necessary.
Summer Workshop for Girls
2009-2014

Innovation!
メディアやテクノロジーを道具として利用し、新しいものを創り出す楽しさを体験しましょう。

Imagination!
メディアとテクノロジーの「みらい」を人々によって社会がどのように変わるとか、あなたがつくる「みらい」について考えてみましょう。

Inspiration!
一段の授業では体験できないような実験は、理数科目に対する苦手意識を克服する、気づきを与えてくれるはずです。
Current / Future Challenge

- Increase of Female Researchers?
  → Innovation???

- Close Collaboration with off-campus institutions

- Double Major / Minor

- Virtual Support

- ICT Major

- Mentor Instructors

- Junior Membership of academic society

- Undergraduate

- Graduate School

- High School
## How to provide sustainable virtual support

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<th>Target Participants</th>
<th>academia</th>
<th>Industry Researchers</th>
<th>Government Officials</th>
<th>Faculty Members</th>
<th>Students</th>
<th>Industry</th>
<th>High Schools</th>
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