Proceedings

3rd Asia Pacific Computer Human Interaction

Shonan Village Center, Japan
July 15 – 17, 1998

Sponsored by

Information Processing Society of Japan (IPSJ)

In cooperation with

ACM Japan Chapter, British HCI Group (UK), CHISIGNZ (New Zealand)
Ergonomics Society of Singapore (ESS) (Singapore), The Graduate University for Advanced Studies
The Institute of Electronics, Information and Communication Engineers (IEICE)
International Federation for Information Processing (IFIP), Japan Ergonomics Society (JES)
Japanese Psychological Association, Japanese Society for Artificial Intelligence
Japan Society for Software Science and Technology (JSSST), Japanese Society for Science of Design
Japanese Cognitive Society, Joint Conference on Educational Technology (JCET)
The Society of Instrument and Control Engineers (SICE), Southeast Asian Ergonomics Society (SEAES)
Universiti Malaysia Sarawak (UNIMAS) (Malaysia)

IEEE COMPUTER SOCIETY

Los Alamitos, California

Washington • Brussels • Tokyo
# Table of Contents

Third Asia Pacific Computer Human Interaction — APCHI’98

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>Preface</td>
<td></td>
<td>xi</td>
</tr>
<tr>
<td>Reviewers</td>
<td></td>
<td>xii</td>
</tr>
<tr>
<td>Cooperating Societies</td>
<td></td>
<td>xiii</td>
</tr>
<tr>
<td>Program Committee</td>
<td></td>
<td>xiv</td>
</tr>
<tr>
<td>Executive Committee/Special Thanks</td>
<td></td>
<td>xvi</td>
</tr>
<tr>
<td>Invited Talks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Beyond “Couch Potatoes”: From Consumers to Designers</td>
<td>2</td>
<td>G. Fischer</td>
</tr>
<tr>
<td>Tangible Bits: Beyond Graphical User Interface (Abstract)</td>
<td>xvii</td>
<td>H. Ishii</td>
</tr>
<tr>
<td>The Computer Revolution Hasn’t Happened Yet (Abstract)</td>
<td>xviii</td>
<td>A. Kay</td>
</tr>
<tr>
<td>Session 1-1: Usability and Modeling</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reduction of Overhead in Drawing Figures with Computer: Detailed Analyses of Drawing Tasks</td>
<td>11</td>
<td>S. Kawachiya, T. Igarashi, S. Matsuoka, H. Tanaka</td>
</tr>
<tr>
<td>Knowledge Required for Understanding Task-Oriented Instructions</td>
<td>19</td>
<td>M. Kitajima, P. Polson</td>
</tr>
<tr>
<td>Pattern Languages for Usability: An Investigation of Alternative Approaches</td>
<td>25</td>
<td>M. Mahemoff, L. Johnston</td>
</tr>
<tr>
<td>Session 1-2: Multimedia and Hypermedia Applications</td>
<td></td>
<td></td>
</tr>
<tr>
<td>A Multimedia MUD System for the Digital Museum</td>
<td>32</td>
<td>T. Usaka, S. Yura, K. Fujimori, H. Mori, K. Sakamura</td>
</tr>
<tr>
<td>A Conference User Interface Supporting Different Access Rights to Shared Hypermedia</td>
<td>38</td>
<td>T. Nakamura, Y. Yokota, S. Konomi, H. Tarumi, Y. Kambayashi</td>
</tr>
<tr>
<td>Session 1-3: Augmented Reality</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Attachable Computer: Augmentation of Electric Household Appliances by Fit-up Computer</td>
<td>51</td>
<td>S. Iga, E. Itoh, F. Higuchi, Y. Michiaki</td>
</tr>
</tbody>
</table>
EnhancedDesk: Integrating Paper Documents and Digital Documents 57
H. Koike, M. Kobayashi

Matrix: A Realtime Object Identification and Registration Method for Augmented Reality 63
J. Rekimoto

Session 2-1: Usability Evaluation

Usability Evaluation in the Field: Lessons from a Case-Study Involving Public Information Kiosks 70
K. Lim, M. Usma

Perceived Usability and System Complexity 76
C. Sikora, R. Swan

A Comparison of Four Interaction Modes for CAD Systems 82
G. Zhang, Z. Guan, G. Dai, X. Ren

Session 2-2: Education and Applications

Network-based Education System Designed to Allow Individual Student Progress and Improve Teacher Efficiency 89
M. Tamaki, T. Kuwabara, K. Yamada, Y. Nakamura

Development of a Multi-User Electronic Conference System DEMPO III for Supporting New Ideas 95
T. Yoshino, J. Munemori, S. Ito, Y. Nagasawa

Learners Interface of a CAL System for Foreign Students to Learn Hiragana/Katakana Characters 101
H. Bandoh, S. Sawada, Y. Fukao, M. Nakagawa

Session 2-3: Multimedia and Agent

The Avatar Navigation of Distributed Virtual Environment by Using Multiview Client 108
M. Sung, C. Park

Development of an Eye-Movement Enhanced Translation Support System 114
H. Takagi

Development of 3D Sound Generation System for Multimedia Application 120

Session 3-1: Usability and Design

Representational Talkback: An Approach to Support Writing as Design 125
Y. Yamamoto, S. Takada, M. Gross, K. Nakakoji

Supporting Mutual Understanding in Collaborative Design Project 132
T. Yamaoka, K. Tsujino, T. Yoshida, S. Nishida
Session 3-2: Communication

Tickertape: Notification and Communication in a Single Line
S. Parsowith, G. Fitzpatrick, S. Kaplan, B. Segall, J. Boot

Human Interaction Issues for User-Configurable Collaborative Editing Components
J. Grundy

Social Process Visualization in Regional Community Network Users
T. Yamakami

Session 3-3: Scripting

Eviss: A Visual System Having a Spatial Parser Generator
A. Baba, J. Tanaka

A Visual Interface for Scripting Virtual Behaviors
M. Kim, E. Lee

Warping to Enhance 3D User Interfaces
B. Thomas

Session 4-1: Task Analysis and Collaboration

Features of Eye Gaze Interface for Selection Tasks
T. Ohno

CollaborationFramework: A Toolkit for Sharing Existing Single-User Applications without Modification
T. Sakairi, M. Shinozaki, M. Kobayashi

Cleogo: Collaborative and Multi-Metaphor Programming for Kids
A. Cockburn, A. Bryant

Session 4-2: 3D Modeling

Virtual Reality for Geosciences Visualization
C. Lin, R. Loftin, T. Stark

Layered Penumbre: An Effective 3D Feedback Technique
Y. Ayatsuka, S. Matsuoka, J. Rekimoto

Claymore: Augmented Direct Manipulation of Three-Dimensional Objects
H. Mitsunobu, T. Oshiba, J. Tanaka

Session 5-1: Groupware Toolkit and Design

A Toolkit for Publishing Web Discussion Documents: Design Principles and Case Studies
T. Sumner, S. Shum

Operation Record Based Workflow Extracting Method for Personal Information Management System
A. Abeta, K. Kakizaki

vii
The Interactions among Media and Psychological Functions on Video-Mediated Communication
X. Fu, M. Shi, S. Wu, X. Sun, M. Yang, G. Yan

Session 5-2: Mobile Systems
Bali: A Live Desktop for Mobile Agents
Y. Minza

Scroll Display: Pointing Device for Palmtop Computers
I. Sio

A Tool for Programmable Access to Organized Multimedia Data: Enhanced MultiMedia Recorder (EMMR)
Y. Ohnori

Session 5-3: Multimodal Interface
Graph Access System for the Visually Impaired
T. Ebina, S. Igi, T. Miyake, H. Takahashi

A Visual Anthropomorphic Agent with Learning Capability of Cooperative Answering Strategy through Speech Dialog
Y. Takama, H. Dohi, M. Ishizuka

Emotional Speech as an Effective Interface for People with Special Needs
A. Iida, N. Campbell, M. Yasumura

Session 6-1: Theory and Practice
Analysis of the Concept of Redundancy Concerning the Design of Multimodal Combinations of Output-Elements
A. Pirhonen

Formalized Approaches for Multimedia Design — Are They Used by Australian Designers?
D. Augusteyn, K. Gunn, Y. Leung

Testing in the Field
C. Nielsen

Routing Drawings in Diagram Displays
W. Lai, P. Eades

Session 6-2: Gesture
Space Browsing Interface based on Head Posture Information
R. Takamatsu, T. Taniguchi, M. Sato

A Two-Level Approach for Modeling and Recognition of Hand Gesture
Y. Nam, K. Wohn, H. Kwang

Segmentation of the Character String Pointed Out by a Finger Tip from a Pair of Color Images
S. Tsuruoka, M. Nishikawa, X. Chen, M. Ishida
Session 6-3: World Wide Web

A Domain Cluster Interface for WWW Search
H. Shimamura, H. Takano, T. Kamba, Y. Koseki

KMi Planet: A Web Based News Server
J. Domingue, P. Scott

A Framework for Event-Driven Demonstration based on the Java Toolkit
M. Miura, J. Tanaka

Origami, Folding Paper over the Web
N. Kishi, Y. Fujii

Discussion 1-1: Development

Computer Based Systems in Household Appliances:
The Study of Eco-Feedback as a Tool for Increasing Conservation Behavior
L. McCalley, C. Midden

Castle in the Air: A Strategy to Model Shapes in a Computer
S. Varshney

Discussion 1-2: Education Systems

GUNGEN: Groupware for a New Idea Generation Consistent Support System
T. Yuizono, J. Munemori, Y. Nagasawa

A Study on the Influence of Personality and Anonymity on
Electronic Brainstorming
T. Mukahi, J. Chimoto, T. Ui

Joint Class Experiments Based on Realtime Web-Browser Synchronization
T. Souya, M. Kobayashi, S. Kawase, K. Ohshima

Discussion 1-3: World Wide Web

A Web Tool for Asynchronous, Collaborative Development of Electronic Meeting Agendas
G. Raikuntlalia

WorkWare: WWW-based Chronological Document Organizer
H. Tsuda, K. Uchino, K. Matsui

The Design of Banking Websites: Lessons from Iterative Design
T. Brinck, D. Gergle

Discussion 1-4: Interface and Direct Manipulation

The Multimedia Interface using "Paper": Ultra Magic Key
H. Usuda, M. Miyazaki

Free Handwriting in Home-Care Workers Support System using
Personal Digital Assistants
T. Suzuki, M. Kondo
Discussion 2-1: Virtual Reality

Psychotherapy with Virtual Pet Agents: The PSY-AAAT Prototype System
S. Ookita, H. Tokuda

Talking Eye: Autonomous Creature as Accomplice for Human
N. Suzuki, K. Ishii, M. Okada

Mixed Task Domain Representation in VR-DIS
M. Coomans, H. Achten

Discussion 2-2: Cognitive Modeling and Group Applications

Factors Determining the Difficulty of Practice Problems in a Computer Language Textbook
Y. Nakamura, T. Kuwabara, K. Takeda

Extracting and Viewing Information Method for Mobile Tele-Conference System
Y. Yamada, K. Ohita, T. Mizuno

A Common Dictionary System Sharing among Multiple Media Conversion Functions
M. Hashimoto, S. Tsujimoto, H. Sugiyama, Y. Takebayashi

Discussion 2-3: Visualization

An Interactive Tutoring System with Tutorials Generation and English-Malay Translation Abilities
N. Dahlan, S. Cvetkovic

JUPITER: A Kanji Learning Environment Focusing on a Learner’s Browsing
Y. Ochi, Y. Yano, R. Wakita, T. Hayashi

Integrating Data/Program Structure and their Visual Expressions in the Visual Programming System
H. Endoh, J. Tanaka

Visualizing Histories for Selective Undo and Redo
C. Meng, M. Yamasue, A. Imamiya, X. Mao

Icon-based Animation from the Object and Dynamic Models based on OMT
S. Joung, J. Tanaka

Index of Authors