STSS2012

First International Symposium on
Socially and Technically Symbiotic Systems

August 29～31, 2012
Tsushima-Campus, Okayama University,
Okayama, Japan

Symposium Schedule
&
Symposium Program

Symposium Schedule

August 28			
16:00–19:00	Registration (Recent Culture Hotel)		
19:00-21:00	Reception (Recent Culture Hotel)		
	3F: Main Lecture Room	1F: No.1 Lecture Room	1F: No.2 Lecture Room
August 29			
9:00	(2F: Registration)	(2F: Registration)	(2F: Registration)
9:30- 9:45	Opening		
9:45-10:45	Plenary Talk		
11:05-12:05		Diagnostic Techniques	System evaluation
12:05-13:30	(Lunch Break)	(Lunch Break)	(Lunch Break)
13:30-14:30	Keynote Speech 1		
14:50-16:30		AR&MR	MFM
August 30			
9:00	(2F: Registration)	(2F: Registration)	(2F: Registration)
9:30-10:50		Robotics	Go-Flow
11:10-12:10		Hand Interfaces	Environmental Issues
12:10-13:30	(Lunch Break)	(Lunch Break)	(Lunch Break)
13:30-14:30	Keynote Speech 2		
14:50-16:10		Communication Support	HMI
16:30-17:50		Remote Communication	Operation Instruction
19:00-21:00	Banquet (Recent Culture Hotel)		
August 31			
9:30	(2F: Registration)	(2F: Registration)	(2F: Registration)
10:00-11:40		Info. Display Systems	Training & Work Organi.
11:40-13:00	(Lunch Break)	(Lunch Break)	(Lunch Break)
13:00-14:15		Keynote Speech 3	
14:30-17:00		Organized Session	

STSS2012

First International Symposium on
Socially and Technically Symbiotic Systems
August 29-31, 2012
Tsushima Campus, Okayama University, Okayama, Japan

Symposium Program

Twenty minutes are assigned for each presentation including 5 minutes' discussions in general sessions.

August 28, 2012 (Tuesday)

16:00-19:00	Registration at Recent Culture Hotel
19:00-21:00	Reception (Recent Culture Hotel)

STSS2012

First International Symposium on Socially and Technically Symbiotic Systems
August 29-31, 2012
Tsushima Campus, Okayama University, Okayama, Japan

August 29, 2012 (Wednesday)

9:00   Registration at Symposium Site (Okayama University)

9:30- 9:45

Opening (3F: Main Lecture Room)

9:45-10:45

Plenary Talk (3F: Main Lecture Room)

Chairperson: Tomio Watanabe (Okayama Prefectural University)

Semiotic Structures Embedded within Human-in-the-Loop Systems for Realizing

Human-Machine Symbiosis

Prof. Tetsuo SAWARAGI (Kyoto University, Japan)

11:05-12:05

Session1A1: Diagnostic Techniques (1F: Lecture Room 1)

Chairperson: Yukiharu OHGA (Hitachi-GE Nuclear Energy, Ltd., Japan)

Detection Method for Small Anomalies in Pumps using Mother Wavelets Extracted from

Real Vibration Signals

Takashi NAGAMATSU[1], Akio GOFUKU[2] ([1]Kobe University, Japan, [2]Okayama

University, Japan)

Diagnosis of Superheater by Estimating an Unobserved Important State Variable

Hiroaki FURUSAWA, Akio GOFUKU (Okayama University, Japan)

Process Data Selection Method to Diagnose Abnormal Situation of Plant Using Support Vector

Machines

Hirotsugu MINOWA, Yuichiro FURUTA ,Yoshiomi MUNESAWA ,

Kazuhiko SUZUKI (Okayama University, Japan)

11:05-11:45

Session 1A2: System Evaluation (1F: Lecture Room 2)

Chairperson: Hiroshi FURUKAWA, University of Tsukuba, Japan)

Research on Man-machine Interface Layout Optimization and Virtual Verification Method

for Complex System

YAN Shengyuan, YU Kun, WANG Shuaiqi (Harbin Engineering University, China)

An Approach to Evaluate Reliability of Digital Protection System with Various

Fault-Tolerant Techniques for Component and System Levels

Bo Gyung KIM[1], Hee Eun KIM[1], Han Seong SON[2], Seung Jun LEE[3],

4

STSS2012

First International Symposium on
Socially and Technically Symbiotic Systems
August 29-31, 2012
Tsushima Campus, Okayama University, Okayama, Japan

Poong Hyun SEONG[1], Hyun Gook KANG[1,4] ([1]Korea Advanced Institute of Science and Technology, Korea, [2]Joongbu University, Korea, [3]Korea Atomic Energy Research Institute, Korea, [4]Khalifa University of Science, UAE)

13:30-14:30

Keynote Speech 1 (3F: Main Lecture Room)

> Chairperson: Kazuhiko Suzuki (Okayama University)

Integrated Safety Information Repository and Applications

> Prof. Paul Chung (Loughborough University, UK)

14:50-16:30

Session 1B1: Augmented Reality and Mixed Reality (1F: Lecture Room 1)

> Chairperson: Hirokazu KATO (Nara Institute of Science and Technology, Japan)
>
> Hirotake ISHII (Kyoto University, Japan)

Prototype of Decommissioning Support AR System for Nuclear Power Plant Using Natural Features

> Hirotsugu MINOWA, Tomofumi FUJIWARA, Yoshiomi MUNESAWA, Kazuhiko SUZUKI (Okayama University, Japan)

A Line Feature-based Tracking Method of Augmented Reality for Supporting Fieldwork of Nuclear Power Plants

> Weida YAN[1], Hirotake ISHII[1], Hiroshi SHIMODA[1], Masanori IZUMI[2] ([1]Kyoto University, Japan, [2]Japan Atomic Energy Agency, Japan)

Augmented Reality Agent as Desktop Assistant

> CHU,Cheng-Tse , Geert LUGTENBERG, Goshiro YAMAMOTO, Takafumi TAKETOMI, Jun MIYAZAKI, Hirokazu KATO (Nara Institute of Science and Technology, Japan)

Implementation of Metalworking Mode in Mixed Reality Modeling System Using ToolDevice

> Ryan ARISANDI, Mai OTSUKI, Asako KIMURA, Fumihisa SHIBATA, Hideyuki TAMURA (Ritsumeikan University, Japan)

Study on Pulse Sound Alarms that Convey a Sense of Urgency in Medical Equipment

> Koichi KANEMOTO[1,2], Nakahiro HARADA[3], Hiroshi FURUHATA[2], Hiroshi FURUKAWA[1] ([1]University of Tsukuba, Japan, [2]The Jikei University School of Medicine, Japan, [3]Fukuda Denshi Co. Ltd., Japan)

STSS2012

*First International Symposium on
Socially and Technically Symbiotic Systems*
August 29-31, 2012
Tsushima Campus, Okayama University, Okayama, Japan

14:50-16:30

Session 1B2: Multilevel Flow Modeling (1F: Lecture Room 2)

Chairperson: Morten LIND (Technical University of Denmark, Denmark)

Akio GOFUKU (Okayama University, Japan)

Modeling Safety Barriers and Defence in Depth with Multilevel Flow Modeling

Morten LIND (Technical University of Denmark, Denmark)

Multilevel Flow Modeling of Domestic Heating Systems

HU Junjie, LIND Morten, YOU Shi, ZHANG Xinxin

(Technical University of Denmark, Denmark)

On Support Functions for the Development of MFM Models

Kai HEUSSEN, Morten LIND (Technical University of Denmark, Denmark)

Reliability Analysis of Digital I&C System in NPP Using MFM

CHEN Wan Qing, YANG Ming (Harbin Engineering University, China)

Agent Based Reasoning in Multilevel Flow Modeling

ZHANG Xinxin, LIND Morten (Technical University of Denmark, Denmark)

STSS2012

First International Symposium on Socially and Technically Symbiotic Systems
August 29-31, 2012
Tsushima Campus, Okayama University, Okayama, Japan

August 30, 2012 (Thursday)

9:00　　Registration at Symposium Site (Okayama University)

9:30-10:50

Session2A1: Robotics (1F: Lecture Room 1)

Chairperson: Masahiro TAKAIWA (Okayama University, Japan)

Sound Localization Assistance System to Pinpoint Survivors' Locations during Rescue Operations

Yuya SHIMODATE, Yuya HONDA, Kazuyuki ITO (Hosei University, Japan)

Study on Teleoperational Performance for Rescue Robot by Stereoscopic Presentation of 3D Scan Data

FUJIWARA Tomofumi, KAMEGAWA Tetsushi, GOFUKU Akio (Okayama University, Japan)

Design of An Autonomous Wall Painting Robot

Mohamed ABDELLATIF (Egypt-Japan University of Science and Technology, Egypt)

Implementation of an Autonomous Traveling System Using RT-middleware for Mobile Robot

GOTO Takahiro, KAMEGAWA Tetsushi, GOFUKU Akio (Okayama University, Japan)

9:30-10:50

Session2A2: Go-Flow Applications (1F: Lecture Room 2)

Chairperson: Takashi NAGAMATSU (Kobe University, Japan)

Modeling of a Human Performance by the GO-FLOW Methodology

Takeshi MATSUOKA, Yusuke KATO (Utsunomiya University, Japan)

Configuration of Risk Monitor System by Plant Defense-in-Depth Risk Monitor and Reliability Monitor

Hidekazu YOSHIKAWA, Morten LIND, Ming YANG, Muhammad HASHIM, Zhijian ZHANG

(Harbin Engineering University, China)

A Risk Management Tool for Online Maintenance at NPPs

Fangqing YANG, Ming YANG (Harbin Engineering University, China)

Reliability Modeling and Analysis of Commonly-used Repairable Equipments in Nuclear Power Plants Using GO-FLOW Methodology

STSS2012

First International Symposium on
Socially and Technically Symbiotic Systems
August 29-31, 2012
Tsushima Campus, Okayama University, Okayama, Japan

Jun YANG, Ming YANG (Harbin Engineering University, China)

11:10-12:10

Session2B1: Hand Interface (1F: Lecture Room 1)

Chairperson: Yoshio NAKATANI (Ritsumeikan University, Japan)

A Proposal of a Card Game System Using Hand Gestures

Takaya NISHIGAWA, Mariko SASAKURA (Okayama University, Japan)

A Touchless Hand Gesture Interface Using a Pair of Acceleration Sensors

Teruaki Ito, Masato Nishimoto (The University of Tokushima, Japan)

A Mobile Handshake Robot System for Generation of Handshake Request Motion during

Active Approach to a Human

Shunsuke OTA, Mitsuru JINDAI, Hitoshi YAMAUCHI, Tomio WATANABE

(Okayama Prefectural University, Japan)

11:10-12:10

Session 2B2: Environmental Issues (1F: Lecture Room 2)

Chairperson: Kyoko ITO (Osaka University, Japan)

Proposal and Evaluation of Online Community Which Are Modeled on School Club

Activities for Promoting Pro-Environmental Behavior

Saizo AOYAGI[1], Oki FUJIWARA[1,2], Hirotake ISHII[1], Hiroshi SHIMODA[1]

([1]Kyoto University, Japan, [2]NEC BIGLOBE, Ltd., Japan)

A Proposal of Feed-in Tariff Personal Carbon Allowance (FIT-PCA) and its Evaluation

Takayoshi KITAMURA, Asao TAKAMATSU, Hirotake ISHII , Hiroshi SHIMODA

(Kyoto University, Japan)

Public Risk Perception of Disaster Waste Generated by the Great East Japan Earthquake

Masaru TANAKA[1], Akio GOFUKU[2], Kazuhiko SATO[3], Yoji NAGAHAMA[3]

Kaoru ISHIZAKA[4]

([1]Tottori University of Environmental Studies, Japan, [2]Okayama University, Japan,

[3]Japan Atomic Energy Agency, Japan,[4] Research Institute of Solid Waste Management

Engineering, Japan)

13:30-14:30

Keynote Speech 2 (3F: Main Lecture Room)

Chairperson: Yang MING (Harbin Engineering University, China)

Condition Monitoring, Symbiotic Systems and Prognostics

Prof. Leonard J. Bond (Iowa State University, USA)

STSS2012

*First International Symposium on
Socially and Technically Symbiotic Systems*
August 29-31, 2012
Tsushima Campus, Okayama University, Okayama, Japan

14:50-16:10

Session 2C1: Communication Support (1F: Lecture Room 1)

Chairperson: Teruaki ITO (The University of Tokushima, Japan)

Influence of Relationship between Game Player and Remote Player on the Performance and State of Mind

Masashi OKUBO, Tsubasa YAMASHITA (Doshisha University, Japan)

An Agent Modeling on Decision Making and Negotiation Processes for Home Ambient Intelligent Systems

Takashi NISHIYAMA[1], Ryoji NAKAJIMA[1], Tetsuo SAWARAGI[2]

([1]Panasonic Corporation, Japan, [2]Kyoto University, Japan)

An Embodied Virtual Communication System with Speech-driven Embodied Entrainment Objects

Yamato NOMURA, Tomio WATANABE, Yutaka ISHII, Yoshihiro SEJIMA
(Okayama Prefectural University, Japan)

An Analysis of Self-expressions Based on Synthesized Facial Expression in Japan and the United States

Yuki NAKAGAWA[1], Kyoko ITO[1], Shogo NISHIDA[1], Rajesh K. GUPTA[2]

([1]Osaka University, Japan, [2]University of California, USA)

14:50-16:10

Session 2C2: Human-Machine Interfaces for Plants (1F: Lecture Room 2)

Chairperson: Makoto TAKAHASHI (Tohoku University, Japan)

Design of Human-Machine Interface for Operator Support System and Technological Evolution

Wenlin WANG, Ming YANG (Harbin Engineering University, China)

New Plant Operation Human-Machine Interface with Forecast by Mirror Plant

Makoto NAKAYA, Emiko HATSUGAI, Toshiaki OMATA, Yuya IKETSUKI,
Ayako KOUNO, Naoto TAKANO (Yokogawa Electric Corporation, Japan)

Development of a Shift Supervisor Support System for Power Plants

Mami KAGIMOTO, Masayo OSAKI, Yohei UENO, Tadashi OI
(Mitsubishi Electric Corporation, Japan)

Wireless Padlocks for Administrative Tagouts

François DIONIS, Nicolas HENRY, Renaud AUBIN (Électricité de France, France)

STSS2012

First International Symposium on Socially and Technically Symbiotic Systems
August 29-31, 2012
Tsushima Campus, Okayama University, Okayama, Japan

16:30-17:50

Session 2D1: Remote Communication (1F: Lecture Room 1)

Chairperson: Yu SHIBUYA (Kyoto Institute of Technology, Japan)

Remote Communication Support System on Smartphone by Enhancing Awareness
- Application to long-distance relationships –

Tomoya OHIRO, Tomoko IZUMI, Yoshio NAKATANI (Ritsumeikan University, Japan)

A Study on Awareness Support Method to Improve Engagement in Remote Communication

Masao TOMOTOSHI, Teruaki ITO (The University of Tokushima, Japan)

Development of an Embodied Video Communication System with a Superimposed Entrainment Character Driven by Voice and Head Motion Inputs

Tomohiro TAKADA, Yutaka ISHII, Tomio WATANABE (Okayama Prefectural University, Japan)

Development of a Typing-driven Embodied Entrainment Character Chat System for Three Users

Masataka TAKEMURA, Tomio WATANABE, Yutaka ISHII (Okayama Prefectural University, Japan)

16:30-17:50

Session 2D2: Operation Instruction (1F: Lecture Room 2)

Chairperson: Tadashi OI (Mitsubishi Electric Corporation, Japan)

The Relationship between the Method of Instructing Subordinates to Perform Assigned Job Duties and the Degree of Mental Workload on the Recipients of the Instruction

HIKONO Masaru[1], NAITO Hiroshi[2], SHINOHARA Kazumitsu[2] ([1]Institute of Nuclear Safety System, Inc., Japan, [2]Osaka University, Japan)

Experimental Study of the Effect of Rule Instruction on the Task Performance under Trade-off Situations

Yuto HORIUCHI, Shohei SEGAWA, Hiroyuki NAKANOWATARI, Makoto TAKAHASHI (Tohoku University, Japan)

A Qualitative Evaluation for Hydrocarbon Sample Collection Standard Operation Procedure of A Refinery Plant Using SPAR-H

ABDUL AZIZ Nor Aisyah, SUZUKI Kazuhiko (Okayama University, Japan)

Directions of Measures to the Problems of Trouble Events Caused by Operation Manuals

STSS2012

First International Symposium on
Socially and Technically Symbiotic Systems
August 29-31, 2012
Tsushima Campus, Okayama University, Okayama, Japan

Takashi MATSUBARA[1,2], Akio GOFUKU[2] ([1]Japan Exlan Company, Ltd., Japan,

[2]Okayama University, Japan)

19:00   Banquet (Recent Culture Hotel)

STSS2012

First International Symposium on
Socially and Technically Symbiotic Systems
August 29-31, 2012
Tsushima Campus, Okayama University, Okayama, Japan

August 31, 2012 (Friday)

9:30   Registration at Symposium Site (Okayama University)

10:00-11:40

Session3A1: Information Display System (1F: Lecture Room 1)

Chairperson: Masashi OKUBO (Doshisha University, Japan)

Interactive Information Display System Based on Posture Measurement

Yuki NAKAMURA, Teruaki ITO (The University of Tokushima, Japan)

Tour Navigation System Using Landmarks that Are Customized by Personal Preference

Shuichi TAKAGI, Masaki MASUDA, Tomoko IZUMI, Yoshio NAKATANI
(Ritsumeikan University, Japan)

Influences of 3D Moving Pictures on the Feeling of Fatigue and Partner's Presence in
Video Conferencing

Fumoto KOBAYASHI, Kazuyoshi MURATA, Yu SHIBUYA (Kyoto Institute of
Technology, Japan)

Analysis of Motions and Utterances in Presentation with a Pointer Rod

Dai TSUKAMOTO[1], Akinori NAKAYAMA[1], Michiya YAMAMOTO[1],
Tomio WATANABE[2]([1]Kwansei Gakuin University, Japan, [2]Okayama Prefectural
University, Japan)

Analysis of Presenter's Gaze Interaction during Presentation with an Eye-Tracking Pen
Display

Keisuke YOSHIDA[1], Syu MIYAKE[1], Michiya YAMAMOTO[1],
Takashi NAGAMATSU[2], Tomio WATANABE[3] ([1]Kwansei Gakuin University,
Japan, [2]Kobe University, Japan, [3]Okayama Prefectural University, Japan)

10:00-11:40

Session3A2: Training and Work Organization (1F: Lecture Room 2)

Chairperson: Hiroshi SHIMODA (Kyoto University, Japan)

Team Skill Preparedness of Operation Personnel in Emergency Conditions

Ho Bin YIM, Ar Ryum KIM, Poong Hyun SEONG (Korea Advanced Institute of
Science and Technology, Korea)

Investigation of Operators' Work Motivation and its Relationship with Organizational
Factors

Hidenori FUJINO[1], Tomoko HORISHITA[1], Tomoyuki SONODA[1],

STSS2012

First International Symposium on
Socially and Technically Symbiotic Systems
August 29-31, 2012
Tsushima Campus, Okayama University, Okayama, Japan

Hiroyuki YAMAGUCHI[2] ([1]West Japan Railway Company, Japan, [2]Kyushu University, Japan)

Development of a Simulation-based SMED Training System

Effendi Bin MOHAMAD, Teruaki ITO (The University of Tokushima, Japan)

A study on the Crew Resource Management Training of Rokkasho Reprocessing Plant

from Resilience Engineering Perspective

Satoru YAMAZAKI[1], Makoto TAKAHASHI[2], Akira ISHIBASHI[2],
Masaharu KITAMURA[2], Daisuke KARIKAWA[2], Toshio WAKABAYASHI[2],
Hiroyuki NAKANOWATARI[1] ([1]Japan Nuclear Fuel Ltd., Japan, [2]Tohoku University, Japan)

Consequences of Employees' Proactive Behaviors in Work Organizations

Yoko TSUMAGARI[1], Hiroshi IKEDA[2] ([1]Kyushu University, Japan, [2]Fukuoka University, Japan)

13:00-14:15

Keynote Speech 3 (1F: Lecture Room 1)

Chairperson: Toshio Sugiman (Kyoto University)

Design of Work from the Resilience Engineering Perspective

Dr. Phil. Leena NORROS (VTT Technical Research Centre of Finland, Finland)

14:30-17:00

Organized Session: Dialogue between Organizational Science and Engineering

(1F: Lecture Room 1)

Chairperson: Toshio Sugiman (Kyoto University)

Managing overseas R&D networks for fostering global innovation

Prof. Kazuhiro ASAKAWA (Keio University, Japan)

Reasons for Innovation: Creating Legitimacy for Resource Mobilization

Prof. Akira TAKEISHI (Kyoto University, Japan),

Prof. Yaichi AOSHIMA (Hitotsubashi University, Japan)