

Human Factors 2024

Wageningen, The Netherlands
8-9 October 2024

ISBN: 979-8-3313-2275-5

Printed from e-media with permission by:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571



Some format issues inherent in the e-media version may also appear in this print version.

Copyright© (2024) by The Royal Institution of Naval Architects
All rights reserved.

Printed with permission by Curran Associates, Inc. (2025)

For permission requests, please contact The Royal Institution of Naval Architects
at the address below.

The Royal Institution of Naval Architects
8-9 Northumberland Street
London, WC2N 5DA
United Kingdom

Phone: 020 7235 4622
Fax: 020 7259 5912

publications@rina.org.uk

Additional copies of this publication are available from:

Curran Associates, Inc.
57 Morehouse Lane
Red Hook, NY 12571 USA
Phone: 845-758-0400
Fax: 845-758-2633
Email: curran@proceedings.com
Web: www.proceedings.com

CONTENTS

PERILS OF THE HUMAN OPERATOR IN MARITIME AUTONOMOUS SYSTEMS	1
<i>A Frizell BMT, UK, A Weir, UK</i>	
RESPONSIBLE INNOVATION AND REGULATIONS FOR HUMAN SAFETY DURING THE MARITIME TWIN TRANSITION	11
<i>B S Bondili, M Lützhöft and S N Colclough, Western Norway University of Applied Sciences, HVL, Norway</i>	
<i>I E Hansen, Norwegian University of Science and Technology, NTNU, Norway.</i>	
AN ONLINE, REAL-TIME, COLLABORATIVE, IMMERSIVE TOOL FOR EARLY-PHASE, OPERATION-CENTRIC MARITIME DESIGN	21
<i>E Gernez, J E Fauske and K Nordby, Oslo School of Architecture and Design, Norway</i>	
<i>E Strange, Kongsberg Maritime, Norway</i>	
PROTOTYPE DESIGN AND EVALUATION OF AUGMENTED REALITY FOR COLLABORATIVE SHIP NAVIGATION	27
<i>F H J Van den Oever, Department of Psychosocial Science, University of Bergen, Norway</i>	
<i>B Sætrevik, Department of Psychosocial Science, University of Bergen, Norway</i>	
<i>B Orthmann, Floating Lab, Stockholm, Sweden</i>	
<i>A van Beek, Troms Fylkestrafikk, Troms County Public Transport Authority, Norway</i>	
<i>K Nordby, Oslo School of Architecture and Design, Norway</i>	
<i>M Fjeld, Department of Information Science and Media Studies, University of Bergen</i>	
USING SHIP BRIDGE SIMULATORS FOR TOOL EVALUATION IN AN EARLY DESIGN STAGE	43
<i>H Diepeveen, MARIN, Netherlands</i>	
“ANY FOOL COULD TELL HOW BAD THE SHIP WAS”: THE IMPORTANCE OF EMPLOYEE VOICE IN SAFETY CULTURE	51
<i>I Bron, Toronto Metropolitan University, Centre for Free Expression, Canada</i>	
<i>J Dalziel and R Pelot, Dalhousie University, Canada</i>	
HOW CAN WE SUPPORT UNCREWED MARITIME AUTONOMOUS SURFACE SHIP OPERATORS IN THEIR DECISION-MAKING?	69
<i>K M Lynch, M S Young, D Taunton, University of Southampton, UK, A P J Roberts, V A Banks Thales, UK</i>	
<i>and K L Plant, University of Southampton, UK</i>	

REALIZING LARGER CLICK SURFACES FOR MARITIME USER INTERFACES USING FUNCTION GROUPING	83
<i>K Nordby and J E Fauske, Oslo School of Architecture and Design, Norway</i>	
AGENT TRANSPARENCY AND HUMAN PERFORMANCE IN THE CONTEXT OF AUTONOMOUS COLLISION AVOIDANCE	89
<i>G K van de Merwe, DNV & University of South-eastern Norway, Norway</i> <i>S Nazir, University of South-eastern Norway, Norway</i> <i>S Mallam, Memorial University of Newfoundland, Canada & University of South-eastern Norway, Norway</i> <i>Ø Engelhardtsen, DNV, Norway</i>	
OPPORTUNITIES FOR ADVANCED MAN-MACHINE TEAMING ON SHIPS THROUGH HOLONIC HUMAN CYBER-PHYSICAL SYSTEMS	93
<i>N C Taylor, Department of Mechanical and Mechatronic Engineering, Stellenbosch University, South Africa</i> <i>K Kruger, Institute for Manufacturing, University of Cambridge, UK</i> <i>A Bekker, Department of Mechanical and Mechatronic Engineering, Stellenbosch University, South Africa</i>	
INTERORGANIZATIONAL SIMULATOR TRAINING FOR AERONAUTICAL AND MARITIME SEARCH AND RESCUE (SAR) PERSONNEL	103
<i>O Schliebusch-Jacob, German Maritime Search and Rescue Service, Germany; T Lübcke, German Maritime Search and Rescue Service, Germany</i>	
AUTONOMOUS SWATH VESSELS FOR WIND FARM INSPECTIONS: A COMPARATIVE STUDY ON OPERATIONAL EFFICIENCY	119
<i>S A Korkmaz, S R Turnock and D Taunton, Maritime Engineering, University of Southampton, UK</i> <i>M Prince, Wolfson Unit MTIA, University of Southampton, UK</i> <i>M Tinnmouth and N Tinnmouth, Acua Ocean, UK</i>	
STRENGTHENING CYBER RESILIENCE AND NAVIGATIONAL SAFETY IN TURKISH STRAITS: DEVELOPMENT AND TESTING OF PREVENTION STRATEGIES IN SIMULATED ENVIRONMENTS	135
<i>Y B Kurt, University of Strathclyde, UK</i> <i>E Akyuz, Istanbul Technical University, Turkey</i> <i>R E Kurt, University of Strathclyde, UK</i>	
ITERATING DIVERGENT AND CONVERGENT THINKING IN HUMAN-CENTRED DESIGN IN A FUTURISTIC PASSENGER SHIP BRIDGE DESIGN	147
<i>Y Man, P Björndal, and E Brorsson ABB, Sweden</i> <i>J Junkers, E Carlson, M Lundh and S N MacKinnon, Chalmers University of Technology, Sweden</i>	