MAY 2016
FEATURES

GUEST EDITORS’ INTRODUCTION
Computing Tools and Techniques for Emergency Response
ALFRED C. WEAVER, GREG BYRD, AND RENEE BRYCE

19
Emergency Informatics: Using Computing to Improve Disaster Management
ROBIN R. MURPHY

28
Impromptu Crisis Mapping to Prioritize Emergency Response
MARCO AVVENUTI, STEFANO CRESCI, FABIO DEL VIGNA, AND MAURIZIO TESCONI

38
A Biobotic Distributed Sensor Network for Under-Rubble Search and Rescue
ALPER BOZKURT, EDGAR LOBATON, AND MIHAIL SICHITIU
ABOUT THIS ISSUE
Computing helps convert a torrent of data and observations into information emergency response teams can use to effectively direct and deploy aid.

FEATURES CONTINUED
47 Applications of Social Networks and Crowdsourcing for Disaster Management Improvement
LILIYA I. BESALEVA AND ALFRED C. WEAVER

RESEARCH FEATURE
54 A Medium-Scale Distributed System for Computer Science Research: Infrastructure for the Long Term
HENRI BAL, DICK EPEMA, CEES DE LAAT, ROB VAN NIEUWPOORT, JOHN ROMEIN, FRANK SEINSTRA, CEES SNOEK, AND HARRY WIJSHOFF

COMPUTING PRACTICES
64 Lightweight Traceability for the Agile Architect
SEBASTIAN GAYER, ANDREA HERRMANN, THORSTEN KEULER, MATTHIAS RIEBISCH, AND PABLO OLIVEIRA ANTONINO

COLUMNS
10 32 & 16 YEARS AGO
Computer, May 1984 and 2000
NEVILLE HOLMES

73 OUT OF BAND
Attenuated FAQs
HAL BERGHEL

78 CLOUD COVER
The Promise of Edge Computing
WEISONG SHI AND SCHAHRAM DUSTDAR

82 AFTERSHOCK
Will Computers Put Us Out of Work?
JOHN LESLIE KING AND JONATHAN GRUDIN

87 STANDARDS
Standards for the Internet of Things: A Case Study in Disaster Response
PHILLIP A. LAPLANTE, JEFFREY VOAS, AND NANCY LAPLANTE

92 SOCIAL COMPUTING
Social Telemedia: The Relationship between Social Information and Networked Media
OMAR NIAMUT, MU MU, SPYROS DENAZIS, AND NICHOLAS RACE

98 STUDENT DESIGN SHOWCASE
Home Sweet Mind-Controlled Home
GREG BYRD

102 CYBERTRUST
Insights on Formal Methods in Cybersecurity
JEFFREY VOAS AND KIM SCHAFFER

128 THE ERRANT HASHTAG
Technical Improvisation
DAVID ALAN GRIER

Membership News
13 70th Anniversary Milestones
72 IEEE Computer Society Information
106 CS Connection
108 Call and Calendar

Departments
8 Elsewhere in the CS
LEE GARBER
14 Spotlight on Transactions
H. CHAD LANE AND DAVID FORSYTH
114 Career Opportunities