

TIEMEC '94

**Bridging
the Gap
Between
Theory
and
Practice**

**Research
and
Applications**

**April 18-21, 1994
Hollywood Beach
Florida**

THE INTERNATIONAL EMERGENCY MANAGEMENT AND ENGINEERING CONFERENCE

**Edited by
James D. Sullivan
Suleyman Tufekci**



IEEE Systems, Man, and
Cybernetics Society



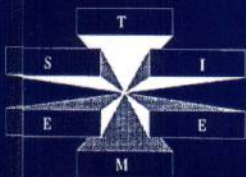
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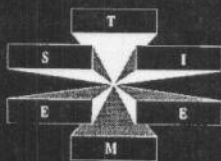
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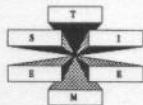
**Bridging the Gap Between Theory and
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APRIL 18-21, 1994
HOLLYWOOD BEACH HILTON
HOLLYWOOD, FLORIDA

Edited by
James D. Sullivan
Optimal Systems, Inc.

Suleyman Tufekci
University of Florida

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Preface

Welcome to the world of high technology tools for emergency management and engineering! Papers from 6 of the 7 continents are contained in this volume, and nearly every type of emergency imaginable is discussed. So, you might say we are global in geographic scope and universal in topical spectrum.

This is our first conference as an independent professional organization. For ten years we were the special interest group of a larger computer society. In 1993, we decided that we had grown up, and it was time to leave an old, familiar, and very comfortable home. But that decision was the correct one, because we have grown almost fifty percent this last year, and attracted more interest, both domestically and internationally, than ever before. In addition, the overall quality of the papers in this proceedings is better than ever before. Some other projects we are working on include special journal issues and a book series on emergency management and engineering.

Many long-time friends are back, and several new faces have joined us as well. We are particularly grateful that the U.S. Bureau of Mines, the Federal Emergency Management Agency, Ecole des Mines de Paris, CEMAGREF, and A/S Quasar Consultants have representatives at our 1994 conference once again. We are also glad that NOAA, USGS, both the Canadian and American Red Cross, and four U.S. National Laboratories will be represented. And if I had the time and the space, I would mention all of the other members of the TIEMES team. We are joined by a common interest in the mitigation of human suffering and death caused by disaster, a far stronger bond than any created by administrative means.

This conference did not happen by accident, if you will pardon the pun, but rather through a tremendous volunteer effort over this last year. Suleyman Tufekci handled a substantial portion of the local arrangements. He also spearheaded the effort to establish a quality newsletter, "*Carpe Diem!*", and is working on putting together one of our special journal issues. He sought and received in cooperation with status from ORSA, IIE, and the University of Florida. Al Wallace was responsible for in cooperation status from IEEE-SMC, Lois Clark McCoy for NI/USR, Yaron Shavit for CEC and Eureka, and Giampiero Beroggi for EURO. "In cooperation with" status has helped provide a great deal of prestige and credibility for such a young organization. Harald Drager has worked very hard in recruiting quality papers for the 1994 conference. And all the other contributions of the program committee members are gratefully acknowledged as well.

This year's proceedings is dedicated to Bob Sheets and the National Hurricane Center. The tireless efforts of Bob and everyone else who works there has saved untold lives. We come to count on highly accurate forecasting, tracking, and monitoring of hurricanes from the National Hurricane Center. And the men and women of the NHC have never let us down.

*James D. Sullivan
Optimal Systems, Inc.*

Introduction

We have come a long way from our humble beginning. After establishing The International Emergency Management and Engineering Society (TIEMES), we began publishing our official newsletter "*Carpe Diem!*". And now, the first International Emergency Management and Engineering Conference, TIEMEC '94, is a reality.

The membership of TIEMES is growing rapidly. Global interest in Emergency Management and Engineering is clearly manifested in this proceedings volume of TIEMEC '94. We have over 60 papers, presentations and panels from 19 different countries scheduled during four days. Each of the contributors are practitioners or leading researchers in Emergency Management and Engineering. Each paper accepted for the proceedings has been reviewed by a panel of researchers with broad expertise in Emergency Management and Engineering.

Practically all types of emergencies are covered in this proceedings. As the theme of TIEMEC '94 puts it nicely, we intend to bridge the gap between the theory and practice of emergency management. With the rapid advancement of computers and communication technologies, very effective emergency management decision support systems are quickly emerging in the market. GIS, multimedia tools and powerful workstations are adding a new dimension to emergency management. You will find a wealth of papers and presentations in this volume that discuss these technologies.

In this volume, you will also find research and applications in emergency management from Australia, Brazil, Canada, Denmark, Egypt, England, France, Germany, Greece, Finland, Japan, India, the Netherlands, Norway, Romania, Russia, Slovenia, Switzerland, and the United States. This is truly an international gathering emphasizing the global importance of Emergency Management and Engineering. TIEMEC '94 also promotes cooperation between emergency managers and engineers around the world. Disasters are one common enemy which brings all countries together in a mutually beneficial alliance. Our goal is to contribute substantially to the formation of such a global alliance.

I would like to thank all the contributors and to our review panel for their efforts in bringing this proceedings volume to fruition.

I also would like to thank the TIEMES President Jim Sullivan for his unselfish and relentless efforts in bringing all these world-class researchers and practitioners to this conference. Without his full-time efforts, we would not have achieved the enormous success this conference has experienced.

Suleyman Tufekci
Program Chair

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