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Planning labor evacuation for construction sites using BIM and agent-based simulation

November 2018 · Safety Science 109:174-185

DOI: 10.1016/j.ssci.2018.04.023

Mohamed M. Marzouk · Ismail Al Daoor

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Future research on cyber-physical emergency management systems

Article

Jan 2013 · Future Internet

Erol Gelenbe · F.-J. Wu

Cyber-physical systems that include human beings and vehicles in a built environment, such as a building or a city, together with sensor networks and decision support systems have attracted much attention. In emergencies, which also include mobile searchers and rescuers, the interactions among...

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Jan 2011

Charles M. Eastman · Paul M. Teicholz · Rafael Sacks · K. Liston

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Emergency Response Systems for Disaster Management in Buildings

Conference Paper

Full-text available

May 2009

Avgoustinos Filippoupolitis · Stelios Timotheou · Nikolaos Dimakis · [...] · George Loukas

Emergency response operations can benefit from the use of information systems that reduce decision making time and facilitate coordination between the participating units. We propose the use of two such systems and evaluate them with a specialised software platform that we have developed for simulatio...

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TABLE FOR RINOTT'S SELECTION PROCEDURE.

Article

Apr 1984 · Journal of Quality Technology

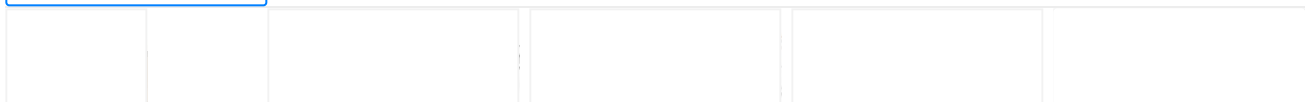
Rand R Wilcox

Y. Rinott proposed an exact two-stage solution to the ranking and selection problem of determining which of k normal distributions has the largest mean. This paper supplies the exact constants needed to apply Rinott's solution.

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Pedestrian simulation based on BIM data

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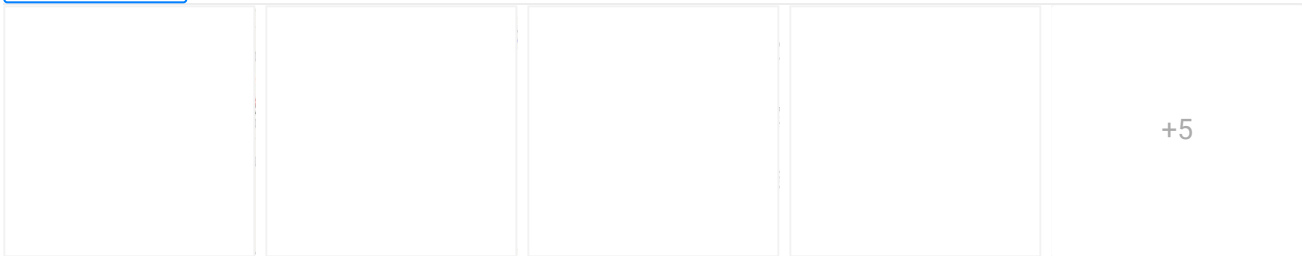
Hermann Mayer · Wolfram Klein · Christian Frey · [...] · André Borrmann

This paper presents an extension of the standardized Industry Foundation Classes (IFC), in order to capture the input data required for performing pedestrian simulations. Pedestrian simulations can identify potential threats already in the design phase of a building and evaluate protective measures. T...

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Managing Crowds in Hazards With Dynamic Grouping

[Article](#) [Full-text available](#)

Jan 2015 · IEEE Access

Olumide Akinwande · Huibo Bi · Erol Gelenbe

Emergency navigation algorithms for evacuees in confined spaces typically treat all evacuees in a homogeneous manner, using a common metric to select the best exit paths. In this paper, we present a quality of service (QoS) driven routing algorithm to cater to the needs of different types of evacuees...

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Agent-based simulation of building evacuation: Combining human behavior with predictable spatial accessibility in a fire emergency

[Article](#)

Feb 2015 · Information Sciences

Lu Tan · Mingyuan Hu · Hui Lin

The building environment and evacuation behavior are decisive factors for building evacuation performance. Shifting toward the use of agent-based models, many current studies have considered the heterogeneous evacuation behavior resulting from an individualized perception of the building...





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BIM Based Virtual Environment for Fire Emergency Evacuation

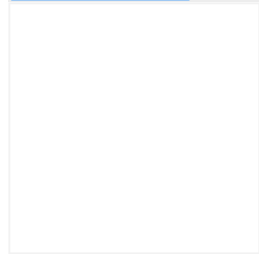
 Bin Wang ·  Haijiang Li ·  Yacine Rezgui · [...] ·  Hoang N Ong

Recent building emergency management research has highlighted the need for the effective utilization of dynamically changing building information. BIM (building information modelling) can play a significant role in this process due to its comprehensive and standardized data format and integrated process. Th...

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Resilience and security of opportunistic communications for emergency evacuation

Conference Paper

Oct 2012

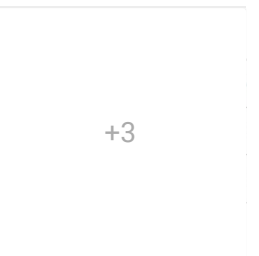
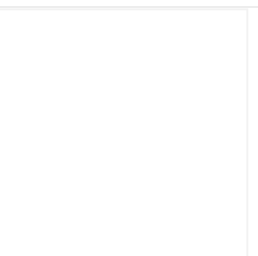
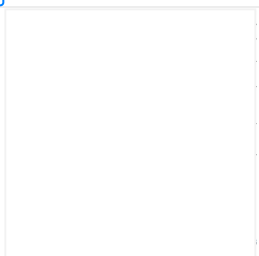
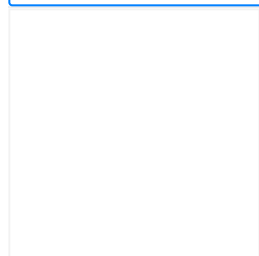
 Gokce Gorbil ·  Erol Gelenbe

We describe an autonomous emergency support system (ESS) based on opportunistic communications (oppcomms) to support navigation and evacuation of civilians in built environments. In our proposed system, civilians are equipped with low-cost human wearable devices that employ oppcomms to...

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DEVS-based Building Information Modeling and simulation for emergency evacuation

Conference Paper

Full-text available

Dec 2012 · Proceedings - Winter Simulation Conference

 Sixuan Wang ·  Michael Van Schyndel ·  G. A. Wainer · [...] ·  Robert Woodbury

Nowadays, numerous Computer-aided Design (CAD) software packages support Building Information Modeling (BIM). BIM software can benefit of advanced simulation in the pre-design phase of construction projects. In this case, we show focus on models of the emergency evacuation regarding t...

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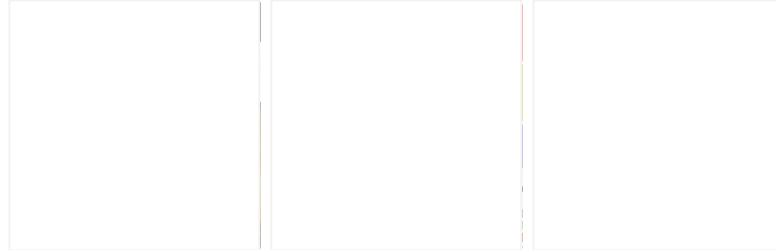
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algorithms for generating them

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BIM-based immersive evacuation simulations

Conference Paper [Full-text available](#)

Jul 2009

 U Rüppel ·  Puyan Abolghasem Zadeh

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The management of construction company overhead costs

Article

Jul 2001 · International Journal of Project Management

 Sadi A. Assaf ·  Abdulaziz Bubshait ·  Sulaiman Atiyah ·  Mohammed Al-Shahri

This paper investigates the overhead cost practices of construction companies in Saudi Arabia. Although overhead costs are extremely important in construction estimation, they can be easily overlooked. Neglecting overhead has forced some contractors out of business, because these costs constitute a...

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Bid preparation for earthmoving operations

Article

Feb 2011 · Canadian Journal of Civil Engineering

 Mohamed M. Marzouk ·  Osama Moselhi

This paper presents a computer system developed to assist earthmoving contractors in preparing proposals. It can also be used by owners and (or) their agents to plan and estimate the cost and duration of earthmoving projects. This is particularly useful for large projects where owners need to define a...

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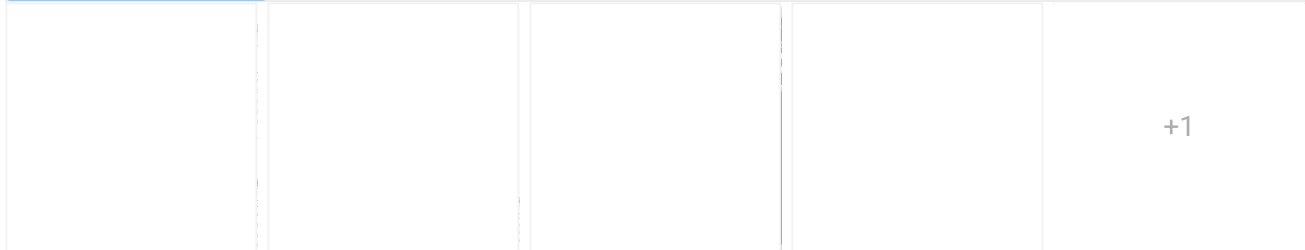
Article

Jan 1978 · Communication in Statistics: Theory and Methods

population with the largest mean from k normal populations with unknown variances. We derive some inequalities and use them to lower-bound the probability of correct selection. These bounds are applie...

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Agent-Based Simulation of Crowd Evacuation Behavior

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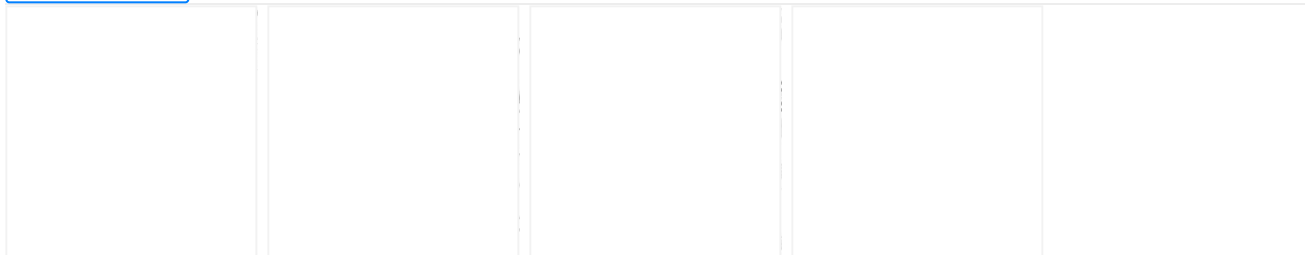
May 2009

 Mihai Horia Zaharia ·  Florin Leon ·  Cristea Pal ·  Gabriel Pagu

In this paper an approach using agents for handling the emergency route simulation is presented. It takes into account the problem of uncharacteristic actions of an unsettled group of people in case of heavy stress given by a local disaster. The algorithm is an extension of the Boids simulation method wi...

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Emergency Response Simulation Using Wireless Sensor Networks

Conference Paper

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Jan 2008

 Avgoustinos Filippoupolitis ·  Laurence Hey ·  George Loukas · [...] ·  Stelios Timotheou

During emergency response situations, decisions have to be made in a timely manner. Multiple entities have to be op-timally coordinated and numerous resources must be allo-cated efficiently, creating a very interesting and challenging technical problem. In this paper we present a simulation system that mode...

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for comparing "populations" with the goal of finding the best among them. We then describe the challenges and opportunities encountered in adapting ranking-and-selection techniques to stochastic

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Agent-Based Simulation of Evacuation: An Office Building Case Study

Chapter

Dec 2010

 Yiqing Lin ·  Igor Fedchenia ·  Bob LaBarre ·  Robert Tomastik

Understanding people behavior and movement characteristics during building evacuation is valuable in evaluating building designs and the effectiveness of evacuation policies. Simulation can be a powerful tool since real data on building evacuation are rarely available and costly to obtain. On the other hand,...

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Autonomous search by robots and animals: A survey

Article

Nov 1997 · Robotics and Autonomous Systems

 Erol Gelenbe ·  Nestor Schmajuk ·  John E R Staddon ·  John Reif

This paper is a survey of research on autonomous search strategies which originate in engineering and biology. Our motivation is to identify methods of search in an essentially two-dimensional Euclidean space, which can be applied to the area of demining. Such search strategies are based on spatio-...

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Autonomous search for mines

Article

Jul 1998 · Proceedings of SPIE - The International Society for Optical Engineering

 Erol Gelenbe ·  Yonghuan Cao

Research on demining includes many different aspects, and in particular the design of efficient and intelligent strategies for (1) determining regions of interest using a variety of sensors, (2) detecting and classifying mines, and (3) searching for mines by autonomous agents. This paper discusses strategies...

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Mar 2009 · Building and Environment

 Zheng Xiaoping ·  Tingkuan Zhong ·  Mengting Liu

Crowd evacuation of a building has been studied over the last decades. In this paper, seven

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Methods for selecting the best system (1991).

Conference Paper Full-text available

Jan 2007

David Goldsman · Barry L. Nelson · Bruce Wayne Schmeiser

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Large-Scale Agent-Based Pedestrian Simulation

Conference Paper

Sep 2007

Franziska Klügl · Guido Rindsfuser

Pedestrian simulation is a challenging and fruitful application area for agent-based modeling and simulation in the traffic and transportation domain. In this paper we will present the concepts and results of a particular project study: an agent-based simulation of pedestrian traffic of the complete railway...

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Ranking and Selection for Steady-State Simulation: Procedures and Perspectives

Article Full-text available

Feb 2002 · Informs Journal on Computing

David Goldsman · Seong-hee Kim · William S. Marshall · Barry L. Nelson

We present and evaluate three ranking-and-selection procedures for use in steady-state simulation experiments when the goal is to find which among a finite number of alternative systems has the largest or smallest long-run average performance. All three procedures extend existing methods for independ...

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Oct 2010 · The Computer Journal

the modelling of diverse and autonomous agents, and it provides mechanisms for the interaction of th...

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A Multi-Agent Based Framework for the Simulation of Human and Social Behaviors During Emergency Evacuations

Article Full-text available

Oct 2007 · AI & Society

Xiaoshan Pan · Charles S. Han · Ken Dauber · Kincho H. Law

Many computational tools for the simulation and design of emergency evacuation and egress are now available. However, due to the scarcity of human and social behavioral data, these computational tools rely on assumptions that have been found inconsistent or unrealistic. This paper presents a multi agent

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Design and Analysis of Experiments for Statistical Selection, Screening, and Multiple Comparisons

Book

Jan 1995 · Technometrics

Robert E. Bechhofer · Thomas J Santner · David Goldsman

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Simple Procedures for Selecting the Best Simulated System when the Number of Alternatives Is Large

Article Full-text available

Nov 1999 · Operations Research

Barry L. Nelson · Julie LeAnne Swann · David Goldsman · Wheyming Song

In this paper we address the problem of finding the simulated system with the best (maximum or minimum) expected performance when the number of alternatives is finite, but large enough that ranking-and-selection (R&S) procedures may require too much computation to be practical. Our approa...



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