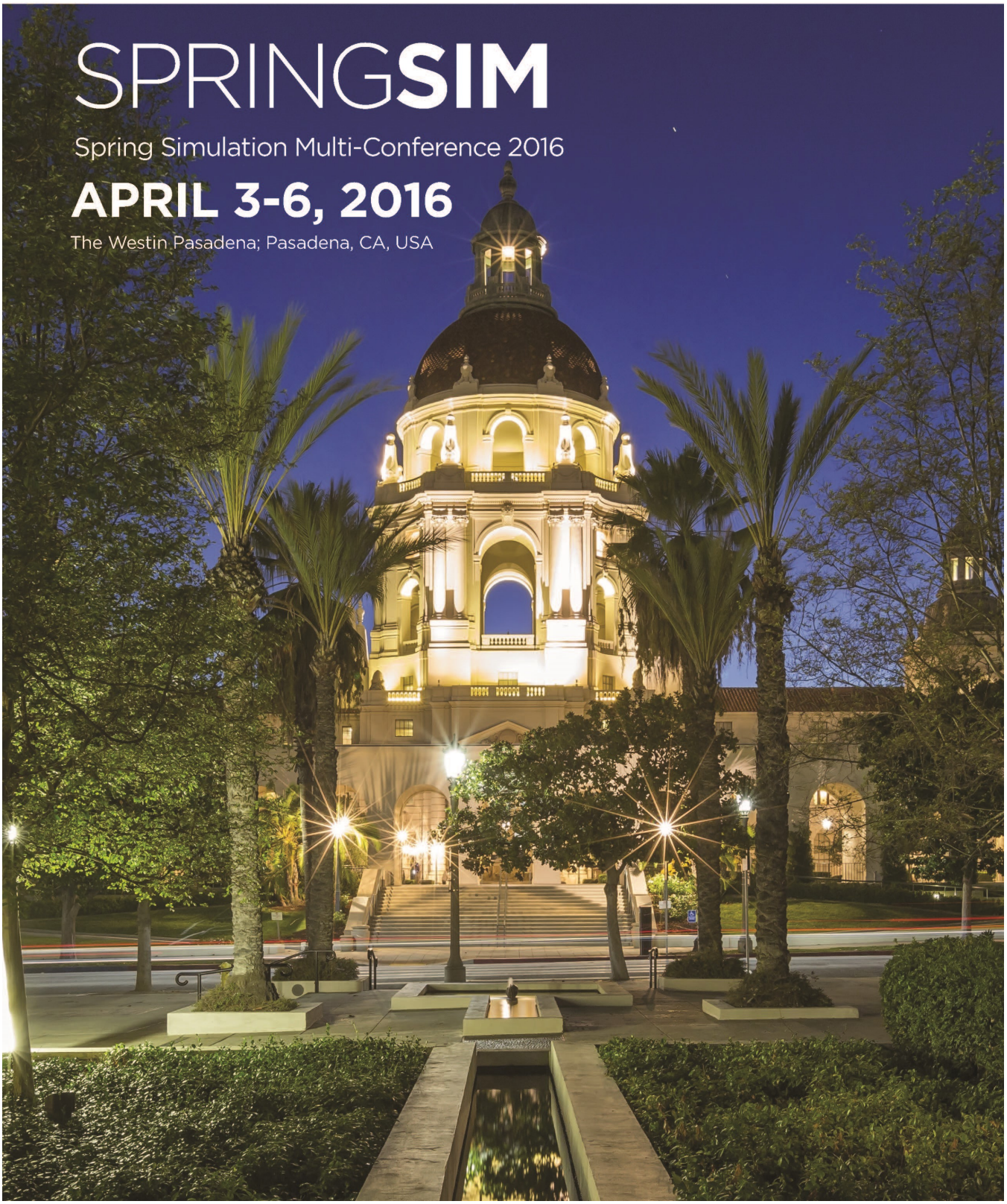
THE SOCIETY FOR
MODELING & SIMULATION
INTERNATIONAL



2016 SpringSim Sponsors

SCS and SpringSim'16

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The SpringSim '16 Organizing Committee

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Vendor Track: Marc Banghart

Welcome to SpringSim'16

Welcome from the General Chair

Dear Delegates,

On behalf of the Organizing Committee, it is my pleasure to welcome you to the 2016 Spring Simulation Multi-conference in Pasadena, California. The conference is organized by the *Society for Modeling and Simulation International (SCS)*, the World's oldest international M&S society, which, from its inception in 1952, has effectively engaged our community and continues to play a significant role in advancing research and its contribution to practice. SpringSim'16 covers state-of-the-art developments in M&S methodology, technology and application in disciplines as diverse as applied computing, communications and networking, medicine, adaptive and autonomous systems.

We have an excellent program to offer our attendees this year. This includes presentation of peer-reviewed original research papers, posters, work in progress, PhD student colloquium, three keynote speeches, tutorials delivered by experts and social events. This year's conference consists of the following seven symposia: *Agent-Directed Simulation Symposium* (Chaired by Levent Yilmaz and Tuncer Ören), *Annual Simulation Symposium* (Jose J. Padilla and Andreas Tolk), *Communications and Networking Symposium* (Hala ElAarag and Abdolreza Abhari), *High Performance Computing Symposium* (Josef Weinbub and Marc Baboulin), *Symposium on Modeling and Simulation in Medicine* (Jerzy Rozenblit and Johannes Sametinger), *Symposium on Theory of Modeling and Simulation* (Fernando Barros and Herbert Prähofer) and a new symposium for SpringSim'16 - Chaired by Saurabh Mittal and Jose Luis Risco Martin- *Simulation of Complexity in Intelligent, Adaptive and Autonomous Systems* (including *Simulation for Planetary Space Exploration* by Priscilla Elfrey). I would like to thank the organisers of the symposia and their respective local committees and reviewers for their effort in putting together the technical part of the program. As a Multi-conference our success depends on their contribution.

We have an exciting line-up of distinguished keynote speakers; I would like to express my gratitude to Prof. Paul Fishwick, Prof. Peter Haas and Dr. Stephen D. Wall for accepting our invitation to deliver keynote speeches. I would like to thank our sponsors who have donated money, software licences and books and which has made it possible for us to recognise best papers in the conference, support student travel, and provide an enhanced conference experience for our delegates.

This year's conference is being held in the city of Pasadena, a city which is home to Caltech and the NASA/Caltech research centre for robotic space exploration- the Jet Propulsion Laboratory. We have organised a delegate tour of JPL on Monday afternoon and we hope many of you will be joining us (kindly note this requires pre-registration). I would like to thank the officers of the SCS, Oletha Darensburg, Aleah Hockridge and their team for organising the tour and for conference coordination activities. I would like to thank numerous volunteers and in particular Mike Chinni for his help with the proceedings.

Welcome to SpringSim'16

My sincere gratitude also goes to my Organization Committee of SpringSim'16. I would like to thank Saurabh Mittal (Vice-General Chair), Gregory Zacharewicz (Program Chair), Umut Durak and Murat Gunal (Proceedings Co-Chairs) and their extended proceedings team, Saikou Diallo (Awards and Sponsorship Chair), Masoud Fakhimi (Publicity Chair), Ross Gore (Tutorial Chair), Mamadou D. Seck (WIP Chair), Andrew J. Collins and Caroline C. Krejci (Poster Session and Student Colloquium Co-Chairs), Salim Chemlal and Mohammad Moallemi (Student M&S Mobile App Competition Co-Chairs) and Marc Banghart (Vendor Track) for their outstanding service.

Please enjoy the conference and your time in Pasadena!

Thank you for making SprimSim'16 a success through your participation. We look forward to your continued participation in SpringSim'17.

Navonil Mustafee, Ph.D.

General Chair, SpringSim'16

University of Exeter, Exeter, UK

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GENERAL INFO

SpringSim'16 Symposia

- Agent-Directed Simulation (ADS)
  - General Chair: Levent Yilmaz
  - General Co-Chair: Tuncer Ören
  - Program Chair: Gregory Madey
  - Program Co-Chair: Yu Zhang and Maarten Siehuis

- Annual Simulation Symposium (ANSS)
  - General Chair: Jose J. Padilla
  - General Co-Chair: Andreas Tolk
  - Program Chair: Shafagh Jafer

- Communications and Networking Symposium (CNS)
  - General Chair: Hala ElAarag
  - Co-Chair: Abdolreza Abhari

- Symposium on Theory of Modeling and Simulation (TMS/DEVS)
  - General Chair: Fernando Barros
  - General Co-Chair: Herbert Prahofer
  - Program Chair: Xiaolin Hu
  - Program Co-chair: Joachim Denil

- High Performance Computing Symposium (HPC)
  - General Chair: Josef Weinbub
  - General Vice-Chair: Marc Baboulin
  - Program Chair: Will Thacker
  - Program Vice-Chair: Lukas Polok

SpringSim'16 Symposia

- **Modeling and Simulation of Complexity in Intelligent, Adaptive and Autonomous Systems (MSCIAAS)**
  - General Chair: Saurabh Mittal
  - General Co-Chair: Jose Luis Risco Martin
  - Program Chair: Deniz Cetinkaya
  - Proceedings Chair: Marina Zapater

- **Simulation for Planetary Space Exploration**
  - General Chair: Priscilla Elfrey
  - Program Chair: Rick Severinghaus
  - Proceedings Chair: Phillip Michael

- **Modeling and Simulation in Medicine (MSM)**
  - General Chair: Jerzy Rozenblit
  - Program Chair: Johannes Sametinger

- **Work in Progress (WIP)**
  - General Chair: Mamadou Seck

- **Poster Session and Student Colloquium**
  - General Chair: Andrew Collins and Caroline Krejci
  - Program Chair: Gregory Zacharewicz

- **Student Modeling & Simulation Mobile App Competition**
  - Symposium Chair: Salim Chemlal
  - Symposium Co-Chair: Mohammad Moallemi

General Information

Registration

Your registration for SCS's 2016 Spring Simulation Multi-conference (SpringSim'16) includes morning and afternoon breaks each day, the Monday evening reception in the Fountain III/Foyer and access to all sessions, tutorials and special presentations (unless otherwise noted).

- **Registration Hours** (*San Gabriel Foyer on Sunday, all other days Santa Rosa Foyer*):
    - ◊ **Sunday**, April 3rd – 0800 -1700
    - ◊ **Monday**, April 4th – 0700–1700
    - ◊ **Tuesday**, April 5th – 0700–1700
    - ◊ **Wednesday**, April 6th– 0730–1500

    Please note that the Registration Desk will be closed for lunch Mon-Wed from 1200-1330

Breaks

- **Coffee Breaks** (*Fountain III)*
    - ◊ **Monday**, April 4th – 1000–1030 | 1500-1530
    - ◊ **Tuesday**, April 5th – 1000–1030 | 1500-1530
    - ◊ **Wednesday**, April 6th – 1000–1030| 1500-1530

Plenary/Keynotes

- **Plenary Session and Keynotes** (*Fountain I & II)*
    - ◊ **Monday**, **Tuesday, Wednesday** 0830-1000 (See Keynote pages for more information on the speakers)

General Information

Conference Meetings & Events

• • Sunday:

SCS Board Meeting (0900); Arcadia
*SCS Board Members

Tutorials (0915-1800); Altadena

Student Colloquium/Poster Presentations (1500-1800); Los Feliz

Welcome Social (1600-1800) San Gabriel Foyer
*All conference attendees invited

• • Monday:

Plenary Session (0830-1000); Fountain I & II
Keynote Address: Stephen D. Wall, (0900-1000)

JPL Tour (meet in front of the Westin at 1300 to catch bus; tour runs 1400-1630 and then bus returns to the Westin)
*Pre-registered Attendees ONLY

Conference Organizers Planning Lunch (1200); Fountain III
*By Invitation Only

Meet and Greet Mixer (1730-1900); Fountain III/Foyer
*All conference attendees invited

• • Tuesday:

Plenary Session (0830-1000); Fountain I & II
Keynote Address: Peter J. Haas (0900-1000)

Spring 2017 Organization Planning Meeting with Symposia Chairs (1200); Fountain III
*By Invitation Only

• • Wednesday:

Plenary Session (0830-1000); Fountain I & II
Keynote Address: Paul Fishwick (0900-1000)

General Information

Sunday Welcome Social

There will be a Welcome social in San Gabriel Foyer open to all SpringSim'16 attendees. Pick up your badge and grab a light snack or stop by after the student events and tutorials on Sunday, April 3, 2016, from 1600-1800.

JPL Tour

Monday, April 4, 2016, 1400-1630, See flyer for those pre-registered.

Monday Evening Meet and Greet Mixer

There will be a Welcome Reception in Fountain III/Foyer open to all SpringSim'16 attendees, on Monday, April 4, 2016, from 1730-1900. Hors d'oeuvres served.

Speakers' Breakfasts

Speakers' breakfasts will be held Monday – Wednesday from 0700 – 0815, located in Fountain III. All presenters are invited on the day of their presentation to join their session chairs for a continental breakfast. We ask that you plan on attending only on the day of your presentation.

Best Paper Award

The Overall Best Paper Award for SpringSim'16 will be presented at Monday's Plenary Session.

Student Colloquium/Posters

The Student Colloquium and Poster presentations will take place on Sunday, April 3, 2016 (see agenda for more details).

Student Colloquium: The colloquium is intended to bring together students in both early and advanced stages of their careers who are working on any modeling and simulation topics, to provide them a friendly forum and an opportunity to present, discuss and illustrate their ongoing research in a constructive and enjoyable atmosphere.

Posters: These outstanding short paper submissions will be presented in a poster format at the conference. The short papers present interesting recent results, novel ideas or works-in-progress that are not quite ready for a full-length paper. The posters will be on display throughout the week to be viewed near the break area.

Upcoming SCS Events

2016 Symposium on Simulation for Architecture and Urban Design (SIMAUD '16)

May 16-18, 2016 University College London, London, UK

We are pleased to welcome you to the 7th annual **Symposium on Simulation for Architecture and Urban Design (SimAUD)**. This venue brings together the brightest researchers and practitioners in the fields of architecture, urban design, urban planning, building science, visualization and simulation. We are very excited about this year's event since it marks SimAUD's inaugural event in Europe. In past years, attendees have included researchers, engineers, architects, software developers, managers, educators, and business professionals. Past SimAUD symposia have attracted exceptionally high-quality submissions (papers, notes, works in progress, datasets, and videos) on a diverse range of topics.

2016 Summer Simulation Multi-Conference (SummerSim '16)

July 24-27, 2016, Palais des congress de Montreal (Montreal Convention Center), Montreal, Quebec, Canada

The Summer Simulation Multi-Conference 2016 (SummerSim'16) is a combination of the Summer Computer Simulation Conference (SCSC), the International Symposium on Performance Evaluation of Computer and Telecommunications Systems (SPECTS), and International Conference on Bond Graph Modeling and Simulation (ICBGM). SummerSim is SCS's premier international conference in cooperation with ACM SIGSIM. The conference focuses on modeling and simulation, tools, theory, methodologies and applications and provides a forum for the latest R&D results in academia and industry. This year's focus is on the Role of Simulation Tools, Methodologies and Technologies in Scalable and Interoperable Cyber-Physical Systems and Interdisciplinary Issues for a Connected Word. We encourage you to take this opportunity to experience the tutorials, tracks, and workshops that will be available.

2016 Autumn Simulation Multi-Conference (AutumnSim '16)

October 8-11, 2016, Beijing, China

The 2016 International Simulation Multi-Conference is a joint conference of the 16th Asia Simulation Conference and the 2016 Autumn Simulation Multi-Conference (AsiaSim / SCS AutumnSim 2016). The Asia Simulation Conference (AsiaSim) is an annual international conference started in 1999. In 2011, the Federation of Asian Simulation Societies (ASIASIM) was set up and the AsiaSim became an annual conference of ASIASIM. The SCS Autumn Simulation Multi-Conference (AutumnSim) is one of the premier conferences of the Society for Modeling & Simulation International (SCS), which provides a unique opportunity to learn about emerging M&S applications in many thriving fields. The 2016 International Simulation Multi-Conference focuses on the theory, methodology, tool and application for M&S of complex systems and will provide a forum for the latest R&D results in academia and industry. Together with the conference, the International Simulation Expo 2016 will be held.

Please visit www.scs.org for more information about the above events.

Notes

TUTORIALS

Tutorials Information

Tutorial Schedule (Sunday, April 3, 2016)

Tutorial Chair: Ross Gore

Room: Altadena

Devs Modelling and Simulation

Time: 0915–1045

Speakers: Yentl Van Tendeloo and Hans Vangheluwe

SHORT BREAK 1045-1100

Modeling Using Text and Network Analysis

Time: 1100–1230

Speaker: Justin Lane

LUNCH BREAK 1230-1330

Data-Driven Healthcare

Time: 1330–1500

Speaker: David Bell

SHORT BREAK 1500-1515

CLOUDES: Rethinking How We Learn, Build and Play with Simulations

Time: 1515–1615

Speaker: Jose Padilla

SHORT BREAK 1615-1630

Anthropomorphic Task Analysis for Simulation

Time: 1630–1800

Speaker: John Richardson

Tutorials Information (Cont.)

TITLE: DEVS Modelling and Simulation

DAY/TIME: Sunday, April 3 0915 - 1045

SPEAKER: Yentl Van Tendeloo, University of Antwerp, and Hans Vangheluwe, University of Antwerp

Abstract

DEVS is a popular formalism for modelling complex dynamic systems using a discrete-event abstraction. During a bounded time interval, only a finite number of relevant events can occur. The state variables are considered to change instantaneously, with the state being constant in between two state changes. Main advantages of DEVS are its rigorous formal definition, and its support for modularity; models can be nested. Thanks to its precise specification as well as its modularity, DEVS frequently serves as simulation "assembly language" to which models in other formalisms are mapped. It is suited for both manual modelling, as we for automated generation. This furthermore makes it possible to combine models in different formalisms together, by mapping both to DEVS.

This tutorial provides an introductory, hands-on tutorial on the practical usage of the DEVS formalism. Both Classic DEVS and Parallel DEVS will be introduced. The formalisms are explained in a bottom-up way, starting from simple autonomous Atomic DEVS models, up to the running of the simulation experiments. Each aspect of the DEVS formalism is considered by means of a minimal running example: a simple traffic light. While the focus is on the practical use of DEVS modelling simulation, the necessary theoretical foundations are interleaved, albeit at a high level of abstraction. Finally, the link is briefly made with realtime simulation.

Examples are presented using PythonPDEVS, though the foundations and techniques apply to other DEVS simulations tools as well. PythonPDEVS, all used examples, and related publications can be downloaded from http://msdl.cs.mcgill.ca/projects/DEVS/PythonPDEVS

Tutorials Information (Cont.)

TITLE: Modeling Using Text and Network Analysis

DAY/TIME: Sunday, April 3 1100 - 1230

SPEAKER: Justin Lane, Post-Doctoral Fellow

Abstract

This workshop will present two text analysis techniques that can be used to analyzed raw texts drawn from online and real-world sources. This can include interviews, online social network data, books, news reports, and transcripts. The first technique analyzes texts for their psychometric properties. This utilizes a software program known as LIWC, which codes texts using psychometrically validated measurements drawn from human populations. This allows us to understand emotional and social aspects of a text that may not be accessible from other forms of text analysis. The second technique covers semantic network analysis.

This technique quantifies texts based on the relationships between concepts in the text, resulting in quantified network based schemas that represent the text; these networks can be analyzed and compared in order to understand the importance of concepts in the text or how different datasets are related. The presentation will introduce the necessary concepts and software that is available through simple hands on training. The goal is not immediate expertise, but providing the necessary knowledge to experiment start using these techniques for your own analyses. The presentation will also provide examples and use cases.

Tutorials Information (Cont.)

TITLE: Data-Driven Healthcare

DAY/TIME: Sunday, April 3 1330 - 1500

SPEAKER: David Bell, Lecturer in the Department of Computer Science at Brunel University

Abstract

Healthcare systems are a heterogeneous network of services continually reacting to demographic, economic, and technological change. Modeling this change is difficult and often hampered by limited knowledge about the healthcare system as a whole. The rapid growth in available data from internal, published and open data sources provides a number of opportunities for gaining wider system knowledge. Early health economic estimates of new medical technologies become more viable as data becomes available. In particular, new techniques can assist designers and developers of health technology in making appropriate product investment decisions.

Consequently, this then allows companies to understand their likely market and possible reimbursement more thoroughly. Despite the many advantages of new medical technologies, a key problem facing decision makers is the poor understanding of the potential value gained from new or alternative product or service offerings. Tools for Evaluation Around Point-of-Care Testing (Tea-PoCT) is an Innovate UK funded project, and Web platform, where pathway data is gathered through both traditional seeking and data mining techniques using R. Visual and semantic tagging is then applied to provide provenance and reusability to collected data, supporting embedded economic models and scenario analysis. Importantly, these same tags are then utilized as a means to design, develop and deploy simulation models using traditional relational concepts (demonstrated with a Tea-SIM agent based model).

Tutorials Information (Cont.)

TITLE: CLOUDES: Rethinking How We Learn, Build and Play with Simulations

DAY/TIME: Sunday, April 3 1515 - 1615

SPEAKER: Jose Padilla, Research Assistant Professor

Abstract

Computer literacy and STEM (Science, Technology, Engineering, Math) Education are today at the forefront of educational efforts. They both have the potential of making people, young and old, participants of the ongoing technological revolution by opening the doors to entrepreneurship and well-remunerated jobs. Computer literacy is considered crucial as reflected by efforts such as those of code.org and scratch.org. . STEM, on the other hand, has been and will be the driving force behind ocean and space exploration, advanced manufacturing, robotics, biotechnology, and transportation to mention a few. One approach to getting that exposure to both is through modeling and simulation (M&S). M&S teaches students how to capture a real or imaginary system in a computer and ask questions about that system.

M&S helps develop the ability to 1) meaningfully simplify a complex problem; 2) capture the problem in a model; 3) describe the model in a computer language, 4) collect meaningful input data; 5) execute the model over time; 6) obtain and analyze results and 7) make inferences about a potential solution to the problem. Further, models and simulations expose users to logic and statistics along of developing problem solving and analytical skills. In order to support the learning and the practicing of using and building simulations, VMASC developed CLOUDES. CLOUDES is an online environment where students can create, access, and share simulations. It is easy to use, accessible through mobile devices and no programming is needed.

Tutorials Information (Cont.)

TITLE: Anthropomorphic Task Analysis for Simulation

DAY/TIME: Sunday, April 3 1630 -1800

SPEAKER: John Richardson

Abstract

This tutorial discusses the use of anthropomorphic strategies and tools for Simulation. Advances in simulation have produced a suite of strategies and tools for simulation, both open source and commercial. Strategies include numerical, graphic, symbolic, transfer-function models, object oriented models such as Modelica based tools, DEVS and multi physics [COMSOL is such an example].

However, as simulation domains become more complex and draw techniques from various research communities, tools are becoming multi-purpose and multi-modal. This scaling across research domains is an extremely complex simulation interoperability problem. Tools from different research communities that once needed to scale within the communities domain of primary interest now have to scale between research communities. Many solutions attempt to scale via extensions to the community strategies and tools to attach strategies and tools from other communities. This attempts to provide bridge solutions that cross research multi-purpose and multi-modal domains for ever more complex simulations.

This tutorial attempts to provide the audience with a class of bridging solutions based upon anthropomorphic principles and human factors. Example: Any Downtown with mixed residential, office and commercial.

Requirements for various anthropomorphic interoperability solution

1) Anthropomorphic DAQ [Data Acquisition, I.E., cyber physical]
    a) High speed real time
    b) Vision [sight]
    c) Sound
    d) simulated sensors for input from various locations in an extremely complex virtual environment

Tutorials Information (Con't)

TITLE: Anthropomorphic Task Analysis for Simulation (Continued from Previous Page)

DAY/TIME: Sunday, April 3 1630-1800

SPEAKER: John Richardson

Abstract

This requirement requires tools like Labview which is a parallel data flow icon language. The program statements are graphical icons. MATLAB, MATLAB toolboxes and Simulink to absorb the input and Simulink 3D Animation to integrate in a virtual environment. Plus standards and reference implementations [Open Scengraph, X3D viewers] related to WebGL, VRML and X3D derived from open standards communities such as the Web3D consortium and Kronos [OpenGL , OpenCL, WebGL standards].

2) Anthropomorphic computation for the science required by anthropomorphic tools
   a) I like to call this Symbolic Algebraic Manipulation
   b) plus some logic [PROLOG, ordinal numbers in MAPLE]
   c) MATLAB toolboxes. MAPLE and Mathematica and Mathematica's system modeler
   d) Numerical physics [COMSOL is an example]

This requirement is for symbolic multi-modal simulation

3) Human Factors Programming
   a) Anthropomorphic Languages
   b) Usability

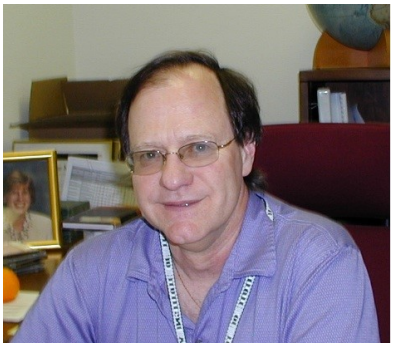
This requirement needs anthropomorphic languages in conjunction with standard languages [C, Python, FORTRAN and Parallel API's]. It also helps to throw in English [or French]. An example is equivalents such as SuperCard on the Macintosh or MetaCard for other systems.

This tutorial discusses a solution based upon Human Factors and Task Analysis for formulating an interoperability solution that combines anthropomorphic DAQ, computation and Task Analysis for complex distributed simulation.

KEYNOTES

Keynotes Information

TITLE: Model-Based Space Exploration
AUTHOR: Stephen D. Wall, Jet Propulsion Laboratory
LOCATION: Fountain I & II
DAY/TIME: Monday, April 4 0900-1000



ABSTRACT:
Question: How do you test something that hasn't been built, yet has to work in an environment you can't reach (or even come close to), and sometimes can't even be put together or operated until it's too late to fix anything? Answer: model-based design!! Even before the days of what we now call "model-based" design, this was an issue at JPL. Some novel methods were used to address it, but with integrated models we can be much better prepared for the increasing challenges that space exploration and its very hostile environments bring. We will discuss some of the early and current embodiments of models, simulations and formal methods in our engineering design processes as NASA heads toward finding out what's "out there".

SHORT BIO:

Stephen D. Wall is the Integrated Modeling and Simulation Manager at Jet Propulsion Laboratory and an instructor in engineering and management for Caltech's Center for Technology and Management Education. His research centers on the use of integrated model-based simulations to explore mission tradespaces in the aerospace design process. He has held design, systems, analysis and management positions on many NASA programs, including Viking, Magellan, Shuttle Radar Laboratory, and Cassini. Steve was one of the originators of JPL's conceptual-phase collaborative design team known as "Team X" in the late 1990's, going on to create and led JPL's Center of Excellence for Space Mission Architecture and Design. He introduced the concept of model-based design to JPL in the early 2000's and later led a similar program for the National Reconnaissance Office. From 2007 to 2010 he served as a member of the U.S. Air Force Science Advisory Board, and in 2013 he helped to develop a scenario-based, failure-tolerant design process for DARPA's F6 program. He currently leads the development of architectural design simulators for NASA's Human Exploration and Operations Mission Directorate.

Steve holds a BS in physics from N.C. State University and an MS in Optical Engineering from University of Rochester (NY). He has been awarded NASA's Exceptional Service Medal, Exceptional Achievement Medal, and 12 NASA Group Achievement Awards.

Keynotes Information

TITLE: Information Management and Simulation: Innovation at the Interface

AUTHOR: Peter J. Haas, IBM Almaden Research Center

LOCATION: Fountain I & II

DAY/TIME: Tuesday, April 5 0900-1000

ABSTRACT:

Over the past few years, the synergy between information management and simulation has been steadily increasing. This talk will outline some interesting developments at the intersection of these two fields, based on the speaker's work at IBM Research as well as the work of others. Tentative topics include: native simulation support within a database, exploiting information-integration technology for composite simulation, running SQL database queries as part of simulation execution, merging simulated and sensor data, and the use of probabilistic databases for robust simulation.

SHORT BIO:

Peter J. Haas is a Principal Research Staff Member at the IBM Almaden Research Center where, since 1987, he has worked at the interface of information management, applied probability, statistics, and computer simulation. He is an IBM Master Inventor and his ideas have been incorporated into products including IBM's DB2 database system. He is also a Consulting Professor in the Department of Management Science and Engineering at Stanford University, teaching and conducting research in stochastic modeling and simulation. He was President of the INFORMS Simulation Society from 2010 to 2012 and, in 2003, received its Outstanding Simulation Publication Award for his monograph on stochastic Petri nets. He is an ACM Fellow and has received a number of awards for his work on sampling-based exploration of massive datasets (ACM SIGMOD 10-Year Best Paper Award), the Splash platform for collaborative modeling and simulation, techniques for massive-scale matrix completion (2015 IBM Research Outstanding Innovation Award), Monte Carlo methods for scalable querying and machine learning over massive uncertain data, automated relationship discovery in databases, and query optimization methods. He serves on the editorial boards of Operations Research and ACM TOMACS, and was an Associate Editor for the VLDB Journal from 2007 to 2013. He is the author of roughly 150 conference publications, journal articles, and books.

Keynotes Information

TITLE: Modeling: Toward a Discipline

AUTHOR: Paul Fishwick, Distinguished University Chair of Arts, Technology and Emerging Communication (ATEC), and Professor of Computer Science (CS), University of Texas at Dallas

LOCATION: Fountain I & II

DAY/TIME: Wednesday, April 6 0900-1000

ABSTRACT:

Everyone does modeling in some form. In some areas, modeling means deriving a structure using mathematical notation. In other areas, a model refers to a geometric artifact or shape. In simulation, we generally associate a model with an abstract representation of a dynamic system. In simulation, we are concerned with representations of process. However despite our diverse uses of model as a word, modeling is splintered. We often do not think of modeling as a discipline in the same way we think of mathematics as a discipline. Can there be a field called modeling that stretches, like mathematics, across all other disciplines? I suggest that the answer is "yes," and describe a path for the future with modeling examples from a variety of areas, with unifying concepts.

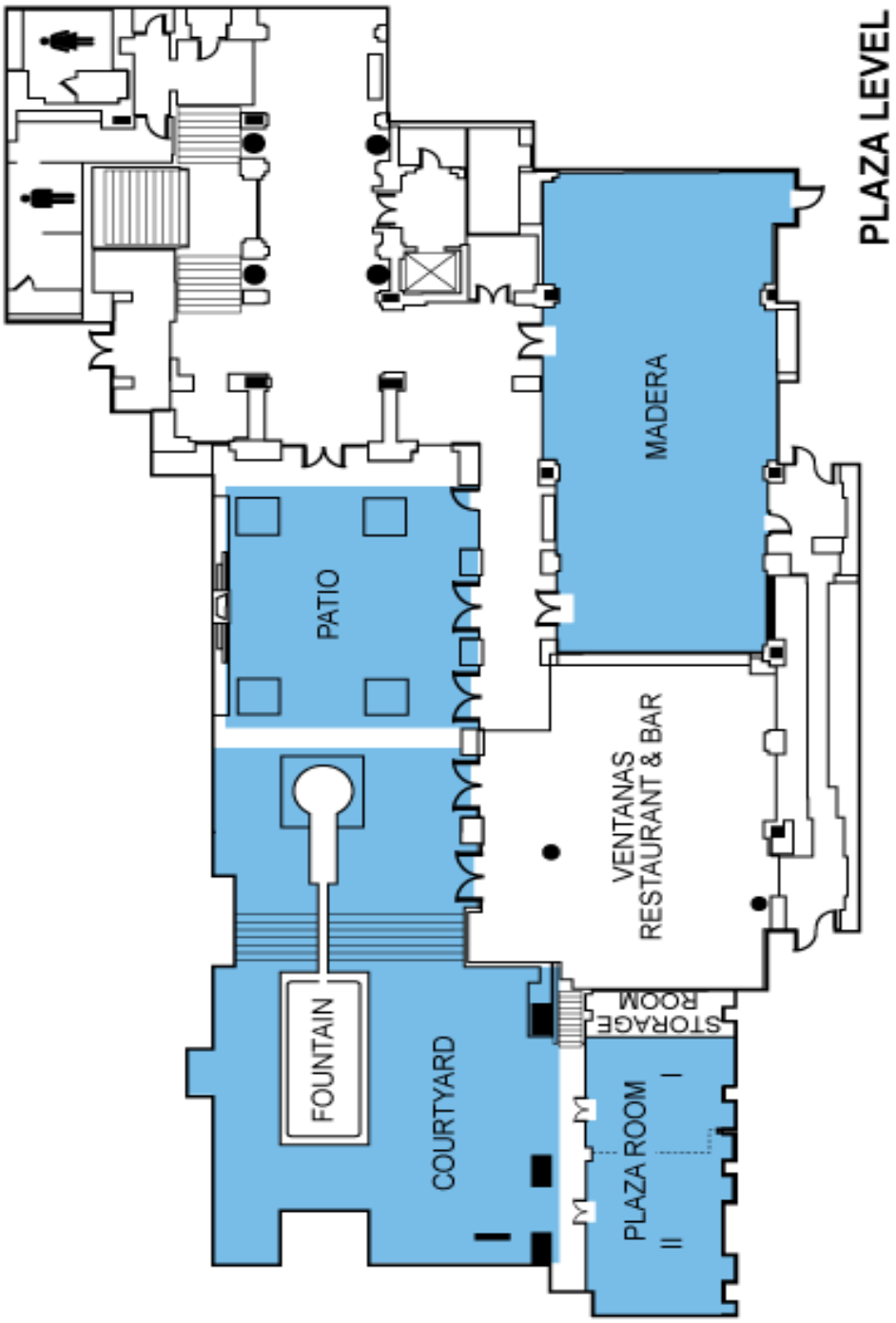
SHORT BIO:

Paul Fishwick is Distinguished University Chair of Arts, Technology, and Emerging Communication (ATEC), and Professor of Computer Science. He has six years of industry experience as a systems analyst working at Newport News Shipbuilding and at NASA Langley Research Center in Virginia. He was on the faculty at the University of Florida from 1986 to 2012, and was Director of the Digital Arts and Sciences Programs. His PhD was in Computer and Information Science from the University of Pennsylvania. Fishwick is active in modeling and simulation, as well as in the bridge areas spanning art, science, and engineering. He pioneered the area of aesthetic computing, resulting in an MIT Press edited volume in 2006.

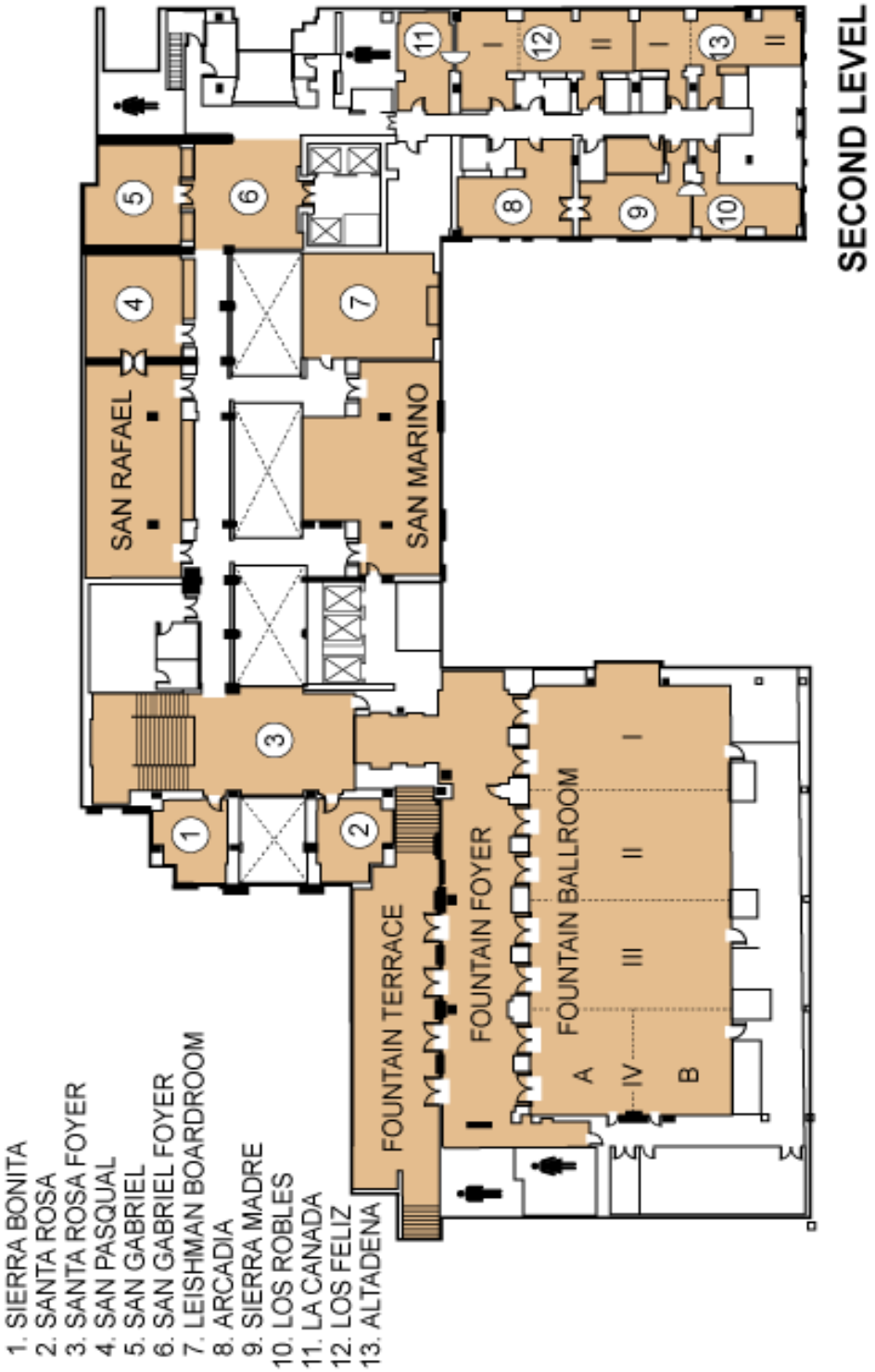
He is a Fellow of the Society for Modeling and Simulation International (SCS), served as General Chair of the Winter Simulation Conference (WSC), was a WSC Titan Speaker in 2009, and has delivered 19 keynote addresses at international conferences. He is Chair of the Association for Computing Machinery (ACM) Special Interest Group in Simulation (SIGSIM). Fishwick has over 250 technical papers and has served on all major archival journal editorial boards related to simulation, including ACM Transactions on Modeling and Simulation (TOMACS) where he was a founding area editor of modeling methodology in 1990, and served for 25 years. He is on the editorial board of ACM Computing Surveys.

MAPS

Hotel Map


PLAZA LEVEL
MADERA
PATIO
VENTANAS
RESTAURANT & BAR
STORAGE
ROOM
FOUNTAIN
COURTYARD
PLAZA ROOM
I
II

Hotel Meeting Space Map



Notes

CONFERENCE At A GLANCE

AND

AGENDAS

SpringSim'16 At A Glance Sessions

		ADS	ANSS	CNS	TMS/DEVS A
Monday	**4-Apr-16**				
0830 – 1000	SCS Plenary				
1000 – 1030	Break				
1030 – 1200	Session Block I	Los Feliz 1&2	Altadena 1&2	Los Robles	Santa Rosa
1200 – 1330	Lunch (on your own)				
1330 – 1500	Session Block II	Los Feliz 1&2	Altadena 1&2	Los Robles	Santa Rosa
1500 – 1530	Break				
1530 – 1700	Session Block III		Altadena 1&2	Los Robles	
1700 – 1800	Evening Session	Los Feliz 1&2			Santa Rosa
Tuesday	**5-Apr-16**				
0830 – 1000	SCS Plenary				
1000 – 1030	Break				
1030 – 1200	Session Block IV	Los Feliz 1&2	Altadena 1&2		Santa Rosa
1200 – 1330	Lunch (on your own)				
1330 – 1500	Session Block V		Altadena 1&2		Santa Rosa
1500 – 1530	Break				
1530 – 1700	Session Block VI		Altadena 1&2		Santa Rosa
Wednesday	**6-Apr-16**				
0830 – 1000	SCS Plenary				
1000 – 1030	Break				
1030 – 1200	Session Block VII		Altadena 1&2		Santa Rosa
1200 – 1330	Lunch (on your own)				
1330 – 1500	Session Block VIII		Altadena 1&2		
1500 – 1530	Break				
1530 – 1700	Session Block IX				

*Posters will be on display during breaks Monday 0800am–1700pm, Tuesday 0800am–1700pm,

SpringSim'16 At A Glance Sessions

TMS/DEVS B	HPC	MSCIAAS	SPSE	MSM	WIP
	Fountain 4A	Arcadia	Sierra Madre		
Santa Bonita	Fountain 4A		Sierra Madre		
	Fountain 4A				
Santa Bonita	Fountain 4A	Arcadia		Los Robles	
Santa Bonita	Fountain 4A	Arcadia		Los Robles	
Santa Bonita	Fountain 4A	Arcadia		Los Robles	
	Fountain 4A				Los Robles
	Fountain 4A				Los Robles
	Fountain 4A				

and Wednesday, 0800am–1500pm

Agent-Directed Simulation (ADS)

Agenda

Monday, 4 April 2016

Session I **1030 – 1200** **Room: Los Feliz 1&2** **Chair: Tuncer Oren**

- *Modeling & Simulation as a Service with the Massive Multi-Agent System MARS (Christian Hüning, Mitja Adebahr, Thomas Thiel-Clemen, Jan Dalski, Ulfia Lenfers, Janus Dybulla, Lukas Grundmann and Gregory A. Kiker)*
- *A Data-driven Agent Based Simulation Platform for Early Health Economics Device Evaluation (David Bell, Armin Kashefi, Tommaso Turchi, Nurul Saleh and Terry Young)*
- *Virtual Experiments Help Explain Intra- and Inter– Strain Variability of AILI-induced Hepatic Necrosis in Mice (Andrew Smith, Glen Ropella and C. Anthony Hunt)*

Session II **1300 – 1400** **Room: Los Feliz 1&2** **Chair: Tuncer Oren**

- *Developing a Vision for Executing Scientifically Useful Virtual Biomedical Experiments (Brenden Petersen and C. Anthony Hunt)*
- *Measuring Analog Granularity (Glen Ropella and C. Anthony Hunt)*
- *Agent-Directed Resource Conversion Process Model Design Principles (Konstantin Aksyonov, Eugene Bykov, Olga Aksyonova, Natalia Goncharova and Alena Nevolina)*

Evening Session **1700 – 1800** **Room: Los Feliz 1&2** **Chair: Tuncer Oren**

- *An Agent-based Model of School Closing in Under-Vacccinated Communities During Measles Outbreaks (Wayne Getz, Colin Carlson, Eric Dougherty, Travis Porco and Richard Salter)*
- *Prospects for Trachoma Elimination Through Mass Treatment Targeted at Children (Roger Ying, Paul M. Williams, Nargesalsadat Dorratoltaj, Joseph Sempa, Laing Lourens, Fengchen Liu, Teshome Gebre, Berhan Ayele, Nothabo Dube, Zhaoxia Zhou, Paul M. Emerson, Thomas M. Lietman and Travis C. Porco)*
- *Implementing a Cell-Centered, Agent-Based Framework with Flexible Environment Granularities using MASON and VTK (Ryan C. Kennedy, Glen E.P. Ropella and C. Anthony Hunt)*

Tuesday, 5 April 2016

Session IV **1030 – 1200** **Room: Los Feliz 1&2** **Chair: Anthony Hunt**

- *Strategic Group Formation in Agent-based Simulation (Andrew Collins and Erika Frydenlund)*
- *TRISim:TRIage Simulation of a Simulation System to Exploit and Assess Triage Operation for Hospital Managers (Atsushi Kobayashi and Masakazu Furuichi)*
- *On the Complexity of the El Farol Bar Game: A Sensitivity Analysis (Shu-Heng Chen and Umberto Gostoli)*

Notes

48th Annual Simulation Symposium (ANSS)

Agenda

Monday, 4 April 2016

Session I 1030—1200 Room: Altadena 1&2 Chair: Shafagh Jafer

- *Simulation of 4G Cellular Communication for Unmanned Air Vehicles (UAVs) (Shafagh Jafer and Stephen Jones)*
- *Conceptual Model for B-737 autopilot in Simulated Flight Management System (Mohammad Moallemi and Massood Towhidnejad)*
- *A Keyword Classification Scheme for OR/MS and M&S (Invited Paper) (Navonil Mustafee and Korina Katsaliaki)*

Session II 1330 – 1500 Room: Altadena 1&2 Chair: Andreas Tolk

- *The Impact of Electric Vehicles on the German Energy System (Marco Pruckner and Reinhard German)*
- *Data-driven Customer Behaviour Model Generation for Agent Based Exploration (David Bell and Chidozie Mgbemena)*
- *Immersive Visualization and Course-of-Action Simulation: Towards a Decision Support Simulation System for Data Driven Businesses (Andreas Tolk, Shawn Chin, Fatma Dandashi and Rick Haberlin)*

Session III 1530 – 1700 Room: Altadena 1&2 Chair: Hamdi Kavak

- *Takeoff Vibrations of a Jetliner: Simulating Possible Cause (Stanislaw Raczynski)*
- *Generalized Template for Suspension Dynamic Modeling With the Use of Bond Graphs (Alex Beckerman and Francis Assadian)*
- *DEM Simulation of Enhancing Drilling Penetration using Vibration and Experimental Validation (Jinghan Zhong, Jianming Yang and Stephen Butt)*

Tuesday, 5 April 2016

Session IV 1030 – 1200 Room: Altadena 1&2 Chair: Umut Durak

- *Towards an Ontology for Simulation Systems Engineering (Umut Durak and Tuncer Ören)*
- *Ontology-Driven Data Input for Optimization (Markus Brandmeier, Franziska Schäfer and Jörg Franke)*
- *Extended Variability Modeling Using System Entity Structure Ontology within MATLAB/Simulink (Thorsten Pawletta, Artur Schmidt, Bernard Zeigler and Umut Durak)*

Session V 1330– 1500 Room: Altadena 1&2 Chair: Andrew Collins

- *When the Money Runs Dry: A System Dynamics Approach to Critical Infrastructure Investment (Erika Frydenlund, Andrew J. Collins, Craig Jordan, Peter Foytik and R. Michael Robinson)*

- *Collaborative Design in the Sustainable Infrastructure Planning Game (Paul Grogan and Olivier de Weck)*
- *Quantitative Analysis of the Mission Impact for Host-level Cyber Defensive Mitigations (Neal Wagner and Cem Sahin)*

Session VI 1530 – 1700 Room: Altadena 1&2 Chair: Dave Shuttleworth

- *Learning Discrete Event Simulation Design Methodology via Interactive and Collaborative Projects (Brian Sanders, David Shuttleworth, Justin Deuro and Jose Padilla)*
- *Evaluating Different Modeling Languages Based on a User Study (Christina Kossow, Tobias Helms, Jan M. Kreutzer, Alke Martens and Adelinde M. Uhrmacher)*
- *Supporting a Systems Approach to Healthy Weight Interventions in British Columbia by Modeling Weight and Well-being (Tanner Verigin, Philippe Giabbanelli and Pal Davidsen)*

Wednesday, 6 April 2016

Session VII 1030 – 1200 Room: Altadena 1&2 Chair: Murat Gunal

- *Cached and Segmented Video Download for Wireless Video Transmission (Ala'a Al-Habashna, Gabriel Wainer, Gary Boudreau and Ronald Casselman)*
- *Study About Decomposition and Integration of Continuous Systems in Discrete Environment (Thomas PARIS, Alexandre TAN, Vincent Chevrier and Laurent Ciarletta)*
- *A Combined Optimization and Simulation Based Methodology for Locating Search and Rescue Helicopters (Nasuh Razi, Mumtaz Karatas and Murat M. Gunal)*

Session VIII 1330 – 1500 Room: Altadena 1&2 Chair: Murat Gunal

- *Performance Evaluation of Mobile Multistatic Search Operations with Simulation (Mumtaz Karatas, Murat M. Gunal and Emily Craparo)*
- *Geo-referenced Image Data Assimilation for Wildfire Spread Simulation (Feng Gu, Rida Syeda and Chunyu Ai)*
- *Virtual World Performance Analysis with Vertically Scaled Multi-threaded Physics (Sean Mondesire, Jonathan Stevens and Douglas Maxwell)*

19th Communications and Networking Symposium (CNS)

Agenda

Monday, 4 April 2016

Session I 1030 – 1200 Room: Los Robles Chair: Hala ElAarag

- *The Need for Realism when Simulating Network Congestion (Kevin Mills and Christopher Dabrowski)*
- *Reducing the Effect of Signal Multipathing in RSSI-Distance Estimation using Kalman Filters (Sam Shue and James Conrad)*
- *Co-Simulation of IP Network Models in the Cyber-Physical Systems Context, using a DEVS-based Platform (Julien Vaubourg, Vincent Chevrier, Laurent Ciarletta and Benjamin Camus)*

Session II 1330 – 1500 Room: Los Robles Chair: Aftab Ahmad

- *NCTCP: A Network Coded TCP Protocol (Justin Ridgewell and Hala ElAarag)*
- *Modeling and Performance Simulation of a Software Architecture for Large-Scale Measurement of Broadband Networks using Colored Petri Nets (Vijay Gehlot, Sarvesh Kulkarni and John Brzozowski)*
- *A Characterization of Cybersecurity Simulation Scenarios (Hamdi Kavak, Jose J. Padilla, Daniele Vernon-Bido, Ross J. Gore and Saikou Y. Diallo)*

Session III 1530 – 1700 Room: Los Robles Chair: Abdy Abhari

- *Credit Card Fraud Detection Using Fuzzy Logic and Neural Network (Thuraya Razooqi, Pansy Khurana, Abdolreza Abhari and Dr. Kamraan Raahemifar)*
- *Workshop: Computer Modeling and Simulation of a Biological Neuron (Aftab Ahmad)*

Notes

Symposium on Theory of Modeling & Simulation (TMS/DEVS)

Agenda

Monday, 4 April 2016

Session TMS 1A 1030 – 1200 Room: Santa Rosa Chair: Hans Vangheluwe

- *An Advanced Data Type with Irrational Numbers to Implement Time in DEVS Simulator (Damián Vicino, Olivier Dalle and Gabriel Wainer)*
- *A Quantum of Continuous Simulated Time (Rhys Goldstein, Simon Breslav and Azam Khan)*
- *A Modular Representation of Asynchronous, Geometric Solvers (Fernando Barros)*

Session TMS 2A 1300 – 1400 Room: Santa Rosa Chair: Gabriel Wainer

- *A Study of the Automobile Blind-Spots' Spatial Dimensions and Angle of Orientation on Side-Sweep Accidents (Gamini Bulumulle and Lotzi Bölöni)*
- *Modeling Human Behavior to Anticipate Insider Attacks via System Dynamics (Hoda Mehrpouyan and David Ackerman)*

Session TMS_PhD 1700—1800 Room: Santa Rosa Chair: Samuel Toma

- *PhD Session*
- *PhD Award and Presentation*

Parallel Sessions TMS_B

Session TMS 2B 1300 – 1400 Room: Santa Bonita Chair: Xiaolin Hu

- *Teaching the Fundamentals of the Modelling of Cyber-Physical Systems (Yentl Van Tendeloo and Hans Vangheluwe)*
- *Parsing and Model Generation for Biological Processes (Laouen Belloli, Gabriel Wainer and Rafael Najmanovich)*

Symposium on Theory of Modeling & Simulation (TMS/DEVS)

Agenda

Tuesday, 5 April 2016

Session TMS 3 1030 — 1200 Room: Santa Rosa Chair: Rhys Goldstein

- *Coupling Petri nets with Deterministic Formalisms Using Co-simulation (David Pierre-Yves Lawrence, Cláudio Gomes, Joachim Denil, Didier Buchs and Hans Vangheluwe)*
- *Enabling FMI-based co-simulation within Papyrus (Sahar Guermazi, Saadia Dhouib, Arnaud Cuccuru, Camille Letavernier and Sébastien Gérard)*
- *Composition of Composable Cellular Automata with Respect to Their Dimensional Attributes (Gary Mayer)*

Session TMS 4 1330 – 1500 Room: Santa Rosa Chair: Joachim Denil

- *DesignDEVS: Reinforcing Theoretical Principles in a Practical and Lightweight Simulation Environment (Rhys Goldstein, Simon Breslav and Azam Khan)*
- *DEVS Distributed Modeling Framework - A Parallel DEVS Implementation via Microservices (Robert Kewley, Neil Kester and Joe McDonnell)*
- *Hybrid Co-simulation of FMUs using DEV&DESS in MECSYCO (Benjamin Camus, Virginie Galtier, Mathieu Caujolle, Vincent Chevrier, Julien Vaubourg, Laurent Ciarletta and Christine Bourjot)*

Session TMS 5 1530 – 1730 Room: Santa Rosa Chair: Gary Mayer

- *Data Driven Simulation Modeling for Mobile Agent-based Systems (Nicholas Keller and Xiaolin Hu)*
- *An Aspect Oriented Framework to Applying Markov Chain Monte Carlo Methods with Dynamic Models (Priyasree Bhowmik, Christopher Dutchyn and Nathaniel Osgood)*
- *Simulation Fidelity Distance: A Game-Theoretic Framework (Sangeeth saagar Ponnusamy, Vincent Albert and Patrice Thebault)*
- *Data Assimilation in Discrete Event Simulations -- A Rollback based Sequential Monte Carlo Approach (Xu Xie, Alexander Verbraeck and Feng Gu)*

Parallel Track B—TMS & Mod4Sim

Session TMS 1 1030 – 1200 Room: Santa Bonita Chair: Peter Maurer

- *Scheduling Predictability In I-DEVS by Schedulability Analysis (Braulio Mello and Gabriel Wainer)*
- *An Approach for Activity-based DEVS Model Specification (Abdurrahman Alshareef, Hessam Sarjoughian and Bahram Zarrin)*
- *A Kernel for Embedded Systems Development and Simulation Using the Boost Library (Daniella Niyonkuru and Gabriel Wainer)*

Session TMS M4S 1 1330 – 1500 Room: Santa Bonita Chair: Andrea D'Ambrogio

- *Modular Design of Hybrid Languages by Explicit Modeling of Semantic Adaptation (Sadaf Mustafiz, Cláudio Gomes, Bruno Barroca and Hans Vangheluwe)*
- *Simulation Deployment Blockset for MATLAB/Simulink (Umut Durak, Anil Ozturk and Mehmet Katircioglu)*
- *A Model Driven Approach to Web-based Traffic Simulation (Deniz Çetinkaya)*

Session TMS M4S 2 1530 - 1700 Room: Santa Bonita Chair: Umut Durak

- *Towards Performance-oriented Perfective Evolution of BPMN Models (Paolo Bocciarelli, Andrea D'Ambrogio, Andrea Giglio and Emiliano Paglia)*
- *Towards an Efficient High-Level Modeling of Heterogeneous Image Processing Systems (Anna Deitsch, Vitali Schneider, Jennifer Kane, Winfried Dulz and Reinhard German)*
- *Integrated Framework for Model-Driven Systems Engineering: A Research Roadmap (Hamzat Olanrewaju Aliyu and Mamadou Kaba Traoré)*

Wednesday, 6 April 2016

Session TMS 6 1030 – 1230 Room: Santa Rosa Chair: Fernando Barros

- *DEVS Execution Acceleration with Machine Learning (Hesham Saadawi, Gabriel Wainer and German Pliego)*
- *Performance Analysis of a PDEVS Simulator Supporting Multiple Synchronization Protocols (Ben Cardoen, Stijn Manhaeve, Tim Tuijn, Yentl Van Tendeloo, Kurt Vanmechelen, Hans Vangheluwe and Jan Broeckhove)*
- *PDEVS Protocol Performance Prediction using Activity Patterns with Finite Probabilistic DEVS (Bernard P. Zeigler, Laurent Capocchi and Jean Francois Santucci)*
- *Time-Parallel Multi-Delay Logic Simulation (Peter Maurer)*

Notes

Monday, 4 April 2016

Session I 1030 – 1200 Room: Fountain 4A Chair: Josef Weinbub

Visualization and Big Data

- *AMR-aware In Situ Indexing and Scalable Querying (Xiaocheng Zou, David Boyuka II, Dhara Desai, Daniel Martin, Suren Byna, Kesheng Wu, Kushal Bansal, Bin Dong, Wenzhao Zhang, Houjun Tang, Dharshi Devendran, David Trebotich, Scott Klasky, Hans Johansen and Nagiza Samatova)*
- *High Performance Data Analytics with Java and MPI on Large Multicore HPC Clusters (Saliya Ekanayake, Supun Kamburugamuve and Geoffrey Fox)*
- *Optimizing In-Situ Data Compression for Large-Scale Scientific Simulations (Henry Lehmann, Eric Werzner, Christian Degenkolb, Subhashis Ray and Bernhard Jung)*

Session II 1330 – 1500 Room: Fountain 4A Chair: Will Thacker

Hybrid Systems & Tools and Environments

- *Simulation Models Verification for Resilient Communication on a Highly Adaptive Energy-Efficient Computer (Stefan Pfennig, Kim Feldhoff, Florina M. Ciorba, Mario Bielert, Elke Franz, Thomas Ilsche, Tobias Reiher and Wolfgang E. Nagel)*
- *Repast HPC with Optimistic Time Management (Bilge Kaan Gorur, Kayhan Imre, Halit Oguztuzun and Levent Yilmaz)*
- *Outer-Loop Vectorization for SIMD Architectures Based on Open64 Compiler (Dong Wang)*

Session III 1530 – 1730 Room: Fountain 4A Chair: Will Thacker

Cloud Computing

- *Managing Deadline-constrained Bag-of-Tasks Jobs on Hybrid Clouds (Bo Wang, Ying Song, Yuzhong Sun and Jun Liu)*
- *Providing Statistical Reliability Guarantees in the AWS Spot Tier (Rich Wolski and John Brevik)*
- *Server Consolidation for Internet Applications in Virtualized Data Centers (Bo Wang, Ying Song, Yuzhong Sun and Jun Liu)*
- *Security-Aware Workflow Scheduling with Selective Task Duplication in Clouds (Xiaomin Zhu, Yabing Zha, Peng Jiao and Huangke Chen)*

Tuesday, 5 April 2016

Session IV 1030 – 1200 Room: Fountain 4A Chair: Lukas Polok

Power Aware Computing

- *Evaluation of Mobile ARM-Based SoCs for High Performance Computing (Andreas Selinger, Karl Rupp and Siegfried Selberherr)*
- *Power Profiling and Evaluating the Effect of Frequency Scaling on NWChem (Vaibhav Sundriyal, Eliscia Fought, Masha Sosonkina and Theresa Windus)*
- *A Framework for Evaluating Promising Power Efficiency Techniques in Future GPUs for HPC (Kapil Dev, Indrani Paul and Wei Huang)*

Session V 1330 – 1500 Room: Fountain 4A Chair: Lukas Polok

GP-GPU I and Algorithms and Architectures

- *Increasing Double Precision Throughput on NVIDIA Maxwell GPUs (Lukas Polok and Pavel Smrz)*
- *On the Efficiency of the Accelerated Processing Unit for scientific computing (Issam Said, Pierre Fortin, Jean-Luc Lamotte, Romain Dolbeau and Henri Calandra)*
- *Shared-Memory Parallelization of the Fast Marching Method Using an Overlapping Domain-Decomposition Approach (Josef Weinbub and Andreas Hoessinger)*

Session VI 1530– 1700 Room: Fountain 4A Chair: Josef Weinbub

GP-GPU II

- *Accelerating linear solvers for reservoir simulation on GPU workstations (Bo Yang, Hui Liu and Zhangxin Chen)*
- *Acceleration of Advanced Radar Processing Chain and Adaptive Pulse Compression using GPGPU (Jingxiao Cai, Yan Zhang, Fanxing Kong and Lihua Li)*
- *Generic approach for pattern matching with OpenCL (Tamás Fekete and Gergely Mezei)*

Wednesday, 6 April 2016

Session VII 1030 – 1200 Room: Fountain 4A Chair: Lukas Polok

High Performance Large Scale Application Case Studies I

- *A High-Throughput Multiobjective Genetic-Algorithm Workflow for In Situ Training of Reactive Molecular-Dynamics Force Fields (Ho Ching Justin Cheng, Evan Brown, Pankaj Rajak, Chunyang Sheng, Rajiv K. Kalia, Aiichiro Nakano and Priya Vashishta)*
- *Towards Modeling a Complex Geological Simulation (David Apostal, Sara Faraji Jalal Apostal and Ronald Marsh)*
- *Accelerating Data Shuffling in MapReduce Framework with Scale-up NUMA Computing Architecture (Xiang Cao, Kewal Keshaorao Panchputre and David Hung-Chang Du)*

Session VIII 1330 – 1500 Room: Fountain 4A Chair: Phil Hammonds

High Performance Large Scale Application Case Studies II

- *Large-scale Reservoir Simulations on Distributed-memory Parallel Computers (Hui Liu, Kun Wang, Zhangxin Chen, Bo Yang and Ruijian He)*
- *Let's Agree on Computing Flops for the Symmetric Sparse Matrix Vector Product (Euripides Montagne and Edward Aymerich)*
- *Geophysical Parameters Retrieval from Sentinel-1 Sar Data: A Case Study for High Performance Computing at EODC (Vahid Naeimi, Stefano Elefante, Senmao Cao, Wolfgang Wagner, Alena Dostalova, Bernhard Bauer-Marschallinger and Stefan Hasenauer)*

Session IX 1530 – 1700 Room: Fountain 4A Chair: Will Thacker

Multicore

- *Optimality Analysis of If-Conversion Transformation (Reem Elkhouly)*
- *AMAP: A New Heuristic Communication-Aware Tasks Mapping onto 2D Mesh NoCs (Hesamedin Ziaeeziabari, Ahmad Patooghy and Midia Reshadi)*

Modeling and Simulation of Complexity in Intelligent, Adaptive and Autonomous Systems (MSCIAAS)

Agenda

Monday, 4 April 2016

Session I 1030 – 1200 Room: Arcadia Chair: Saurabh Mittal

- *Ensuring Model Continuity when Simulating Self-Adaptive Software Systems (Christian Stier and Henning Groenda)*
- *Simulation-Based Evaluation of Eye-Tracking as Control for Mobile Robot Tele-Operation (Ginger Watson, Yiannis Papelis and Kathryn Hicks)*
- *On the Complexity of Interoperability (Invited) (Saikou Diallo)*

Tuesday, 5 April 2016

Session IV 1030 – 1200 Room: Arcadia Chair: Saurabh Mittal

- *Machine Understanding in Agent-Directed Simulation: State-of-the-Art and Research Directions (Keynote by Prof. Tuncer Oren) (Tuncer Oren, Levent Yilmaz and Nasser Ghasem-Aghaee, Mohammad Kazemifard, Fariba Noori)*
- *Stability and Sensitivity Measures for Solutions in Complex, Intelligent, Adaptive and Autonomous Systems (Invited) (Andreas Tolk)*

Session V 1330 – 1500 Room: Arcadia Chair: Saurabh Mittal

- *Model Based Verification of Cyber Range Event Environments (Suresh Damodaran and David Tidmarsh)*
- *Contextualizing Emergent Behavior in System of Systems Engineering using Gap Analysis (Saurabh Mittal and Sheila Cane)*
- *Some Modeling & Simulation Perspectives on Emergence in System-of-Systems (Invited) (Bernard Zeigler and Alexandre Muzy)*

Session VI 1530 – 1700 Room: Arcadia Chair: Deniz Cetinkaya

- *DEVS based Network: Modeling and Simulation of Propagation Processes in a Multi-Layers Network (Youssef Bouanan, Greg Zacharewicz, Bruno Vallespir, Judicael Ribault and Saikou Y. Diallo)*
- *DevsServer: Ambient Intelligence and DEVS Modeling Based Simulation Server (Mostefa Mokaddem, Baghdad Atmani and Abdelmalek Boularas)*

Simulation for Planetary Space Exploration

Agenda

Monday, 4 April 2016

Session I **1030 – 1200** **Room: Sierra Madre** **Chair: Agostino Bruzzone**

- *Panel and SEE Reprise: Stories of the Simulation Exploration Experience*

Session II **1300 – 1400** **Room: Sierra Madre** **Chair: Stephen Paglialonga**

- *The SEE HLA Starter Kit: enabling the rapid prototyping of HLA-based simulations for space exploration (Alberto Falcone and Alfredo Garro)*
- *Autonomous Systems for Operations in Critical Environments (Agostino Bruzzone, Francesco Longo, Riccardo Di Matteo and Giovanni Luca Maglione)*
- *Drones Based Relief on Moon Disaster Simulation (Francesco Longo, Agostino Bruzzone and Antonio Padovano)*

Modeling and Simulation in Medicine (MSM)

Agenda

Tuesday, 5 April 2016

Session IV **1030 – 1200** **Room: Los Robles** **Chair: Jerzy Rozenblit**

TOPIC: Modeling frameworks and data analytics in healthcare

- *Modeling and Simulation in Clinical Trials (Ismail Abbas)*
- *Examining the Transitional Impact of ICD-10 on Healthcare Fraud Detection (Yu Zhang and Tyler Olson)*
- *Modeling and Simulation for Pediatric Sleep and Education Performance Correlations (Janet Roveda, Michelle Perfect and Stuart Quan)*

Session V **1330 – 1500** **Room: Los Robles** **Chair: Johannes Sametinger**

TOPIC: Modeling and simulation for diagnosis and clinical interventions

- *Blood Flow Simulations with Application to Cerebral Aneurysms (Wolfgang Fenz, Johannes Dirnberger and Ivan Georgiev)*
- *Modeling of a Transfer Task in Computer Assisted Surgical Training (Minsik Hong and Jerzy W. Rozenblit)*
- *Comparative Analysis of Classification Models in Diagnosis of Type 2 Diabetes (Daniah Almadni and Abdolreza Abhari)*

Session VI **1530 – 1700** **Room: Los Robles** **Chair: Jerzy Rozenblit**

TOPIC: Modeling and simulation for medical devices and medical apps

- *Rigorous Modeling and Analysis of Interoperable Medical Devices (Atif Mashkoor and Johannes Sametinger)*
- *Simulation Environment for Testing Security and Privacy of Mobile Health Apps (Alexander Mense, Philipp Urbauer, Stefan Sauermann and Harald Wahl)*
- *PANEL: Key directions of M&S research and education in Healthcare (Jerzy W. Rozenblit and Johannes Sametinger)*

Work In Process (WIP)

Agenda

Wednesday, 6 April 2016

Session VII **1030 – 1200** **Room: Los Robles**

- *A Stochastic Model for the Spread of Measles (WIP) (E L Perry, Fortune Mhlanga and Robert Kirchner)*
- *Integrating Agent-based Simulations with Tactical Software in a Live Virtual Constructive Environment (WIP) (David Shuttleworth and Douglas Courtney)*
- *Medical Education with Entertainment (WIP) (Alice Lin, Michael Chen and Fuhua Cheng)*

Session VIII **1330 – 1500** **Room: Los Robles**

- *Modeling and Simulation for Sleep and Disease Correlations (WIP) (Janet Roveda, Michelle Perfect and Stuart Quan)*
- *A Critical Perspective on Simulation Models of Obesity for Public Health (WIP) (Cindy Swartz and Philippe Giabbanelli)*
- *Determining the Best Moment for Hardware Replacement of a Multi-Service Network by Using Software based on Integration of the Object-oriented Approach, Expert Systems and Decision Trees (WIP) (Konstantin Aksyonov, Eugene Bykov, Olga Aksyonova, Natalia Goncharova and Alena Nevolina)*

Poster Session/Student Colloquium

Agenda

Sunday, 3 April 2016

Session I (Student Colloquium) 1500 – 1540 Room: Los Feliz Chair: Caroline Krejci

- *Modeling and Simulation of a Nanofluidics System with Use of a Continuum Model (Murat Bakirci and George Pratt)*
- *Simulation of Hybrid Electric Propulsion for Unmanned Aircraft Systems (Murat Bakirci and Yiannis Papelis)*

1540-1600 BREAK

Session II (Posters) 1600 – 1800 Room: Los Feliz Chair: Andrew Collins

- *Multi-Agent Simulation for Sustainable Urban Decision Making (Caroline Krejci, Ulrike Passe, Michael Dorneich and Nathan Peters)*
- *Analysis of Remote Work in Business Modeling Systems (Konstantin Aksyonov, Eugene Bykov, Olga Aksyonova, Natalia Goncharova and Alena Nevolina)*
- *Second Order Finite Difference Algorithm Development for Supersonic Flow over a Symmetrical Wedge-Shape-Airfoil (Marshall Sewell, Murat Bakirci and Tom Johnson)*
- *DEVS-Based Development of User Interfaces (Hae Young Lee and So Jin Lee)*
- *Modeling Team Collaboration as a System of Systems Against Adversaries: An Agent-Based Model (Edwin Torres)*
- *Human Mobility Modeling Framework: Utilizing Real-Life Footprints through Agent-Based Simulation and Data-Driven Approaches (Hamdi Kavak and Jose J. Padilla)*