ANNSIM'22 Agenda

Monday - July 18, 2022

ANNSIM 2022 Opening (8:30-9:00)
Opening, Introduction, Awards

Keynote Address (9:00-10;00)
Dr. Michael Grieves, Digital Twin Institute
Digital Twins: Utilizing M&S to Drive 21st Century Transformation

SimAUD (10:30-12:00) *Session 1: Urban Modeling & Building Detection*	**MSM (10:30-12:00)** *Session 1: Cardiovascular Applications*	**SPECTS-CNS (10:30-12:00)** *Session 1*	**HPC (10:30-12:00)**	**MSCS (10:30-12:00)**
EXPLORING SPATIAL PATTERNS IN SUSTAINABLE INTEGRATED DISTRICTS: A METHODOLOGY FOR EARLY-PHASE URBAN NETWORK ANALYSIS A.D. Srikanth, C. Hablani, S. Gopalakrishnan and T. Schroepfer	TIME- AND FREQUENCY-BASED INDEPENDENT EVALUATION OF QRST CANCELLATION TECHNIQUES FOR SINGLE-LEAD ELECTROCARDIOGRAMS DURING ATRIAL FIBRILLATION N.F. Price, O. Berenfeld, V. Devabhaktuni and M. Deo	DISTRIBUTED RESOURCE ALLOCATION IN 5G NETWORKS WITH MULTI-AGENT REINFORCEMENT LEARINING J. Menard, A. Al-Habashna, G. Wainer and G. Boudreau	THE EFFECTS OF NUMERICAL PRECISION IN SCIENTIFIC APPLICATIONS R. Murillo, A.A. Del Barrio Garcia and G. Botella	ANALYSIS OF THE IMPACT OF CYBER ATTACK ON SEMICONDUCTOR MANUFACTURING ENERGY QUANTIFICATION B. Ezici, P. Costa, J. Xu
CAPTURING FAÇADE DIVERSITY IN URBAN SETTINGS USING AN AUTOMATED WINDOW TO WALL RATIO DETECTION WORKFLOW N. Tarkhan	INTERACTIVE SIMULATION MODEL OF A CROSS-SCALE CARDIOVASCULAR SYSTEM S. Hofmann, A. Müller and S. von Mammen	BOOLEAN LOGICAL OPERATOR DRIVEN SELECTIVE DATA FILTERING FOR LARGE DATASETS G. Davidson and S. Majumdar	MODEL AND EVALUATION OF A SUPERCONDUCTING-LOGIC BASED HYBRID CPU-ACCELERATOR SYSTEM M. Jagasivamani, C. Fong, K. Goodnow and R. Voigt	ADVERSARIAL MACHINE LEARNING USING CONVOLUTIONAL NEURAL NETWORK WITH IMAGENET U. Khakurel and D. Rawat
BUILDING ENVELOPE OBJECT DETECTION USING YOLO MODELS N. Bayomi, M. ElKholy, J.E. Fernandez, S. Velipasalar and T. Rakha	MODELING CARDIAC CELL BIOPHYSICS USING LONG-SHORT MEMORY NETWORKS B. Silveira Goncalves and M. Deo	VIDEO ANALYTIC DATA REDUCTION MODEL FOR FOG COMPUTING Abdolreza Abhari and Dipak Pudasaini		LUUNU - BLOCKCHAIN, MISP, MODEL CARDS AND FEDERATED LEARNING ENABLED CYBER THREAT INTELLIGENCE SHARING PLATFORM E. Bandara, S. Shetty, R. Mukkamala, A. Rahaman, X. Liang
SHADING DESIGN FOR OUTDOOR LEARNING IN WARM AND HOT CLIMATES USING EVOLUTIONARY COMPUTATION: A CASE STUDY IN HOUSTON TX. M. Kyropoulou				

Strategy Meeting Day 1: "How to get Published" Presented by Richard Jansz-Moore (12:30-13:30)

SimAUD (13:30-15:00) *Session 2: (Day) Lighting & Energy Exploration*	**MSM (13:30-15:00)** *Session 2: Physiology Simulation*	**SPECTS-CNS (13:30-15:00)** *Session 2*	**TMS (13:30-15:00)** *Session 1*	**CPS (13:30-15:00)** *Session 1*
DETERMINING CRITICAL POINTS TO CONTROL ELECTRIC LIGHTING TO MEET CIRCADIAN LIGHTING REQUIREMENTS AND MINIMIZE ENERGY USE	IMPLEMENTATION OF A DYNAMIC AND EXTENSIBLE MECHANICAL VENTILATOR MODEL FOR REAL-TIME PHYSIOLOGICAL SIMULATION	CONTROLLER AREA NETWORK DISCRETE-EVENT SYSTEM SPECIFICATION FOR INDEPENDENT NODE TESTING	A QUANTIZED STATE INTEGRATOR WITH SECOND ORDER ERRORS OVER MONOTONIC SEGMENTS J. Nutaro and R. Mahawattege	A NEW MODELING FRAMEWORK FOR CYBER-PHYSICAL AND HUMAN SYSTEMS M. Poursoltan, N. Pinede, B. Vallespir and M.K. Traoré

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B. Abboushi and S. Safranek	J.B. Webb, A. Bray, J. Gerard, S. Frembgen, H. Scheirich, J. VanPelt and R. Clipp	M. Jamal, J. Boi-Ukeme and G. Wainer		
DYNAMIC SUBSET SENSITIVITY ANALYSIS FOR DESIGN EXPLORATION L. Hinkle, G. Pavlak, L. Curtis and N. Brown	INTEGRATIVE PHYSIOLOGY-COUPLED PILOT-CENTERED FLIGHT SIMULATION S. Harrison, A. Bulysheva, R. Clipp, J. Webb, M. Mitchum, B. Newman and M. Audette	SOFTWARE-DEFINED OPTICAL LOCAL AREA NETWORK ARCHITECTURE AND PRIORITY TRAFFIC PERFORMANCE ANALYSIS P. Baziana	MODEL AND EXECUTION SCALABLE TRAITS FOR INTERACTION (NEXUS) MODELING OF WATER AND ENERGY SYSTEMS M. Fard and H. Sarjoughian	A DIGITAL TWIN BASED APPROACH FOR ENSURING BUSINESS CONTINUITY PLAN AND SAFE RETURN TO WORKPLACE S. Barat, D. Mulpuru, A. Yadav, A. Basu, V. Kulkarni, S. Samudrala, A. Bhide, P. Thomas, K. Krishna, A. Yadav and A. Mazumder
IMPACT ASSESSMENT OF ENERGY CONSERVATION MEASURES ON BUILDING ENERGY CONSUMPTION, CARBON EMISSION, AND ADAPTATION COST USING FUTURE WEATHER DATA Z. Zolfaghari, T. Raja, P. Kusumadjaja, D. Salinas, U.N. Kapini and P. Pease		ENABLING COLLABORATIVE MODELING THROUGH A WEB LIBRARY OF DEVS MODELS H. Qassoud, B. St-Aubin, G. Wainer and C.R. Martin	MULTI-PARADIGM MODELLING FOR MODEL BASED SYSTEMS ENGINEERING: EXTENDING THE FTG+PM R. Paredis, J. Exelmans and H. Vangheluwe	INTEGRATION OF THE MAPE-K LOOP IN DIGITAL TWINS H. Feng, C. Gomes, S. Gil, P.H. Mikkelsen, D. Tola, M. Sandberg and P.G. Larsen
SimAUD (15:30-17:00) *Session 3: Building Envelope*	**MSM (15:30-17:00)**	**SPECTS-CNS (15:30-17:00)** *Session 3*	**TMS (15:30-17:00)** *Session 2*	**CPS (15:30-17:00)** *Session 2*
OPTIMIZATION-BASED DESIGN EXPLORATION OF THE MUTUAL INFLUENCE BETWEEN BUILDING MASSING AND FAÇADE DESIGN X. Liu, L. Wang and G.H. Ji	**MSM Panel Discussion: Convergence between Medical Simulation and Neural Networks**	AN IOT BASED SMART MONITORING SYSTEM DETECTING PATIENT FALL H. Rajaei	DATA ASSIMILATION FOR SIMULATION-BASED REAL-TIME PREDICTION/ANALYSIS X. Hu	KNOWLEDGE STRUCTURES OVER SIMULATION UNITS E. Kamburjan and E.B. Johnsen
A STOCHASTIC APPROACH TO SIMULATE AND OPTIMIZE THE COATING UNIFORMITY OF ROTATIONAL MOLDING FOR MICROALGAE FACADES C. Wu, G. Herbst, A. Lujan and K.H. Kim		INCREMENTAL TEXT CLUSTERING ALGORITHM FOR CLOUD-BASED DATA MANAGEMENT IN SCIENTIFIC RESEARCH PAPERS M. Nilufar and A. Abhari	ESS: EMF-BASED SIMULATION SPECIFICATION, A DOMAIN-SPECIFIC LANGUAGE FOR MODEL VALIDATION EXPERIMENTS J. Mertens and J. Denil	THE MODULAR DESIGN EVALUATION MODEL: SUPPORT FOR DECISION-MAKING IN CYBER-PHYSICAL SYSTEMS DESIGN M.R. Modeer
PREDICTING COOLING ENERGY DEMANDS OF ADAPTIVE FACADES USING ARTIFICIAL NEURAL NETWORK A. Alammar and W. Jabi			GEOGRAPHICAL SEVIRD COVID-19 MODEL WITH TRAVEL RESTRICTIONS C.R. Martin, N. Patel and G. Wainer	
AUTOMATICALLY GENERATING SURFACE WIND PRESSURE IN HIGH-RISE BUILDINGS THROUGH DEEP LEARNING L.S. Sun, S. Cao, L. Wang and G. Ji				

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Tuesday - July 19, 2022

SimAUD (8:30-10:00)
Session 4: Urban Microclimate and Comfort

INFOMORPHISM: URBAN PLANNING FOR RENEWABLE ENERGY INTEGRATION VIA SIMULATED ENERGY EXCHANGE NETWORKS
F. Li, K.R. Schell and A. Tsamis

HOW THE URBAN MICROCLIMATE AND OUTDOOR THERMAL COMFORT CAN AFFECT INTRA-CITY MOBILITY PATTERNS: EVIDENCE FROM NEW YORK CITY
Y. Yang, D. Wang and T. Dogan

AN URBAN FEASIBILITY STUDY INTO BALANCING UPFRONT EMBODIED CARBON EMISSIONS THROUGH INTEGRATED GREEN AREAS AS CARBON OFFSETS
E.R. Newmarch, M. Donn, S.T. Twose, F. Short and D. Dowdell

SimAUD (10:30-12:00)
Session 5: Simulation Tools & Workflows

AN OPTIMIZATION FRAMEWORK AND TOOL FOR CONTEXT-SENSITIVE SOLAR-DRIVEN DESIGN USING GENERATIVE CELLULAR AUTOMATA (SDCA)
S. Luitjohan, N. Abbasabadi and M. Ashayeri

SKETCH TO BUILD: AN INTUITIVE DESIGN PLATFORM FOR

MSM (8:30-10:00)
Session 4: Deep & Machine Learning

SYNTHESIZING BURN WOUND IMAGES FOR DEEP LEARNING APPLICATIONS
B. Schenkenfelder, S. Kaltenleithner, B. Sabrowsky-Hirsch, C. Klug, D.B. Lumenta and J. Scharinger

FALL DETECTION USING SELF-SUPERVISED PRE-TRAINING MODEL
H.G. Yhdego, C. Paolini and M. Audette

MULTI-MODALITY BREAST MRI SEGMENTATION USING NN-UNET FOR PREOPERATIVE PLANNING OF ROBOTIC SURGERY NAVIGATION
M. Alqaoud, J. Plemmons, E. Feliberti, K. Kaipa, S. Dong, G. Fichtinger, Y. Xiao and M. Audette

MSM (10:30-12:00)
Session 5: Computer-Assisted Medicine (surg-plan, telemed, devices)

EXTENSIVE SIMULATION OF HUMAN-ROBOT INTERACTION FOR CRITICAL CARE TELEMEDICINE
I. Kim, A. Nepomuceno, J. Michel, S. Jamison and K. Kesavadas

SIMULATION-BASED FRAMEWORK TO DEVELOP A CONTROL SYSTEM FOR

HSAA/AIS (8:30-10:00)
Session 1: Applied HSAA/AIS

ENCODING PROTEST DURATION IN AN AGENT-BASED MODEL AS CHARACTERISTIC PHASE TRANSITIONS
B.J. Goode and B.S. Pires

TOWARD A MOVEMENT PARADIGM FOR ARTIFICIAL HUMAN AGENTS
T. Clemen, N. Ahmady-Moghaddam, D. Glake, U.A. Lenfers, F.J. Ocker, D. Osterholz and J. Strobele

USING GENERATIVE ADVERSARIAL NETWORKS TO ASSIST SYNTHETIC POPULATION CREATION FOR SIMULATIONS
S. Kotnana, D. Han, T. Anderson, A. Züfle and H. Kavak

HSAA/AIS (10:30-12:00)
Session 2: Policy Support by HSAA/AIS

EXPERT PANEL DISCUSSION: HOW CAN WE PROVIDE BETTER SIMULATION-BASED POLICY SUPPORT?
A. Tolk, T. Clemen, N. Gilbert, and C. Macal
Moderator: T. Anderson

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SUSTAINABLE HOUSING COMPLEXES
Z.P. Zhang and T. Narahara

A NOVEL MULTI-CRITERIA WORKFLOW BASED ON REVERSE SOLAR ENVELOPES FOR THE DESIGN OF RESIDENTIAL CLUSTERS
A. Sepúlveda and F. De Luca

SOFTWARE ARCHITECTURE FOR BIM TO DEVS INTEGRATION
M.A. Patel, V.S. Rajus and G. Wainer

FUNCTIONAL ELECTRICAL STIMULATION
M. Hong, B.A. Hasse, A.J. Fuglevand and J. Rozenblit

CONTEXT-AWARE SECURITY MODES FOR MEDICAL DEVICES
M. Riegler, J. Rozenblit and J. Sametinger

FULLY AUTOMATED CONVERSION OF GLIOMA CLINICAL MRI SCANS INTO A 3D VIRTUAL REALITY MODEL FOR PRESURGICAL PLANNING
R.N. Tucker, B.P. Sutton, C. Duncan, C. Lu, S. Koyejo, A.J. Tsung, J. Maksimovic, T. Ralph, S.M. Pieta and M. T. Bramlet

Strategy Meeting Day 2: "How to Review" Presented by Richard Jansz-Moore (12:30-13:30)

SimAUD (13:30-15:00)
Session 6: Ventilation & Impact of Covid

MEASURING DESIGN SENSITIVITY: AN EVALUATION OF ASSESSMENT METHODS AND METRICS FOR NATURAL VENTILATION STUDIES
N. Tarkhan and S. Mokhtar

A SIMULATION-BASED APPROACH TO MITIGATE DISEASE TRANSMISSION RISK FROM AEROSOL PARTICLES IN BUILDINGS
H. Parhizkar, S. Rockcastle, M. Fretz and K.G. Van Den Wymelenberg

THE INFLUENCE OF COVID RELATED RESTRICTIONS ON THE ENERGY CONSUMPTION OF THE

ANSS (13:30-15:00)

SIMULATION OF DISSEMINATION STRATEGIES ON TEMPORAL NETWORKS
L. Serena, S. Ferretti, M. Zichichi and G. D'Angelo

AUTOMATED MODEL DISCOVERY FOR STEERING BEHAVIOR SIMULATION
H.H. Le and X. Hu

AUTOMATED GENERATION OF PATIENT POPULATION FOR DISCRETE-EVENT SIMULATION USING PROCESS MINING

HSAA/AIS (13:30-15:00)
Session 3: Combing Simulation with AI/ML

TAXONOMY, TOOLS, AND A FRAMEWORK FOR COMBINING SIMULATION MODELS WITH AI/ML MODELS
V. Gehlot, P. Rokowski, E.B. Sloane and N. Wickramasinghe

DEVS MODEL CONSTRUCTION AS A REINFORCEMENT LEARNING PROBLEM
I. David and E. Syriani

COMPOSING MODELING AND SIMULATION WITH MACHINE LEARNING IN JULIA

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BUILDING: THE VENTILATION RATE EFFECT
R. Ashrafi, M. Azarbayjani, H. Tabkhi and M. Sheikhshahrokhdehkordi

J. Le Lay, V. Augusto, J. Neveu and B. Dalmas

C. Rackauckas, R. Anantharaman, A. Edelman, S. Gowda, M. Gwozdz, A. Jain, C. Laughman, Y. Ma, F. Martinuzzi, A. Pal, U. Rajput, E. Saba, V.B. Shah

SimAUD (15:30-18:00)
Session 7: Mixed Realities & Robots

INTEGRATING IMMERSIVE VIRTUAL ENVIRONMENT USER STUDIES INTO ARCHITECTURAL DESIGN PRACTICE
G.D. Bailey, O. Kammler, R. Weiser, S. Schneider and E. Fuchkina

SERVER-BASED MIXED-REALITY SYSTEM FOR MULTIPLE DEVICES TO VISUALIZE A LARGE ARCHITECTURAL MODEL AND SIMULATIONS
R. Tsujimoto, T. Fukuda and N. Yabuki

DEEP SANDSCAPES: DESIGN TOOL FOR ROBOTIC SAND-SHAPING WITH GAN-BASED HEIGHTMAP PREDICTIONS
K. Tsuruta, S.J. Griffioen, R.L. Johns and J.M. Ibáñez

SimAUD 2022 Closing Session (17:00-18:00)

Emerging Topic on Supply Chain Modeling (ET-SCM) (15:30-17:00)

A SIMULATION FRAMEWORK FOR STUDYING FOREIGN RELIANCE ON REGIONAL SUPPLY CHAINS AT THE INDUSTRY LEVEL
Scott Rosen, Andrew E. Hong, L.A. Rayson, W.S. Bland and J.A. Richkus

SUPPLY CHAIN SIMULATION AS A SERVICE TO INCREASE ADAPTATION CAPABILITY IN MANUFACTURING
T. Kiss, G. Terstyanszky, R. Arjun, S. Sardesai, M.D. Goertz and M. Wangenheim

MSBSE (15:30-17:00)

A MSaaS PLATFORM FOR BUSINESS PROCESS MODELING & SIMULATION
P. Bocciarelli, A. D'Ambrogio and M.M. Cialel

VALIDATION OF EPSIM - AN EMBEDDED PLATFORM SIMULATOR FOR CONTROL-EMBEDDED CO-DESIGN
K. Vanherpen, D. Maes, Y. Vanommeslaeghe and P. De Meulenaere

Tutorial (10:30-12:00)

USING SIMULATION TO FINALIZE CERTIFICATION OF UNMANNED AUTONOMOUS SYSTEMS OVER MULTI DOMAIN VIRTUAL TESTING ENVIRONMENT
A. Bruzzone, R. Cianci and A. Giovannetti

Tutorial (1:30-15:00)

INTRODUCTORY TUTORIAL ON AGENT-BASED MODELING AND SIMULATION: ABM DESIGN FOR THE COMING ZOMBIE APOCALYPSE
C. Macal

Tutorial (15:30-17:00)

DEFINING CELL-DEVS MODELS WITH CD++ ONLINE SIMULATION ENVIRONMENT
G. Wainer and C. Ruiz Martin

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Wednesday - July 20, 2022

Tutorials (09:00-12:00)

BUILDING A DISTRIBUTED AGENT-BASED MODEL WITH REPAST4PY
N. Collier and J. Ozik

APPLICATIONS OF DEEP LEARNING IN MODELING OF DYNAMICAL SYSTEMS
C.M. Legaard

Tutorials (09:00-12:00)

AN INTRODUCTION TO EQUATION-BASED OBJECT-ORIENTED MODELLING AND SIMULATION WITH MODELICA
H. Vangheluwe

COMPLEX SIMULATION SPECIFICATION: DO YOUR SIMULATIONS MEET THEIR NEEDS?
H. Sohier

Posters & Demos (12:00-14:00)