



ICBGM

International Conference on
Bond Graph Modeling & Simulation 2024

JULY 1-3, 2024

Hilton Garden Inn San Diego Old Town/SeaWorld Area,
San Diego, California, USA



General Information

Conference Program Schedule

Monday		July 1, 2024		Padre Room
7:00 a.m.	-	8:00 a.m.	Breakfast	
8:30 a.m.	-	10:00 a.m.	Session 1: Chair's Welcome	
10:00 a.m.	-	10:30 a.m.	Morning Coffee Break	
10:30 a.m.	-	12:00 p.m.	Session 2: Session Chair-Rebecca Margetts	
12:00 p.m.	-	1:30 p.m.	Lunch (on your own)	
1:30 p.m.	-	3:00 p.m.	Session 3: Session Chair: Ali Akbari	
3:00 p.m.	-	3:30 p.m.	Afternoon Coffee Break	
3:30 p.m.	-	5:30 p.m.	Session 4: Session Chair: Donald Margolis	
5:30 p.m.	-	6:30 p.m.	SCS Welcome Reception	
Tuesday		July 2, 2024		Padre Room
7:00 a.m.	-	8:00 a.m.	Breakfast	
8:30 a.m.	-	10:00 a.m.	Session 5: Session Chair: Eilif Pedersen	
10:00 a.m.	-	10:30 p.m.	Morning Coffee Break	
10:30 a.m.	-	12:00 p.m.	Session 6: Session Chair: Marcos Augusto Fonseca	
12:00 p.m.	-	1:30 p.m.	Lunch (on your own)	
1:30 p.m.	-	3:00 p.m.	Session 7: Session Chair: Yupeng Zhang	
3:00 p.m.	-	3:30 p.m.	Afternoon Coffee Break	
3:30 p.m.	-	5:00 p.m.	Session 8: Program Committee Meeting	
Wednesday		July 3, 2024		Padre Room
7:00 a.m.	-	8:00 a.m.	Breakfast	
8:30 a.m.	-	10:00 a.m.	Keynote Speaker Plenary	
10:00 a.m.	-	10:30 a.m.	Morning Coffee Break	
10:30 a.m.	-	12:00 p.m.	Session 10: Session Chair: Pushparaj Mani Pathak	

2024 Bond Graph (ICBGM)

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San Diego, California USA

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Welcome to Bond Graph 2024 (ICBGM)

Welcome from the General Chair and the Program Chair of Bond Graph 2024 (ICBGM'24)

Dear Conference Participants,

Professor Granda and I welcome you to the 2024 International Conference on Bond Graph Modeling (ICBGM'24). Our conference organizers anticipate a successful conference in the interesting and beautiful city of San Diego. After months of planning, coordinating, and strategizing, SCS would like to welcome you.

Everyone at SCS has put in a lot of effort to make these three days thrilling and to guarantee that SCS offers one of the premier M&S community events.

The conference this year offers a great opportunity to learn more about the most recent developments in M&S research and to network with other industry professionals.

We are happy to report that a number of interesting papers will be presented. The papers will be in the areas of bond graph theory, simulation techniques, modeling methods and engineering applications. It will be evident that bond graph techniques are continuing to be developed on a world wide scale and are being applied to an ever widening field of problems.

We hope that your stay in San Diego will be both pleasant and personally productive.

Professor José J. Granda and Professor Jesus Felez

2024 Bond Graph (ICBGM)

Sponsored by:

The Society for Modeling and Simulation International (SCS)
American Institute for Aeronautics and Astronautics (AIAA)

General Chair: Professor José J. Granda,
California State University, Sacramento USA
Email: grandajj@ecs.csus.edu

Program Chair: Jesus Felez
Universidad Politecnica de Madrid, Spain
Email: jesus.felez@upm.es

The 15th International Conference on Bond Graph Modeling and Simulation (ICBGM'2024) brings together research paper presentations, panel sessions, tutorials, workshops, seminars, industrial applications, and software demonstrations that use Bond Graph modeling methods. There will be featured plenary speakers and some special invited presentations.

This conference focuses on Bond Graph modeling techniques for modeling and simulation of dynamic systems. Theoretical principles for electrical, mechanical, hydraulic, thermal, pneumatic, control and mechatronic systems applications will be presented. Leading industrial users of the method in automotive, aircraft, fluid power, kinematics, multibody systems, and social and biological systems have been invited.

General Information

ICBGM 2024 Registration

Breezeway Foyer

Monday, July 1, 2024

8:00 a.m. to 5:00 p.m.

Tuesday, July 2, 2024

8:00 a.m. to 5:00 p.m.

Wednesday, July 3, 2024

8:00 a.m. to 5:00 p.m.

ICBGM 2024 Meeting Room

Padre Room

Monday: 8:30 a.m. to 5:30 p.m.

Tuesday: 8:30 a.m. to 5:00 p.m.

Wednesday: 8:30 a.m. to 5:00 p.m.

General Information

ICBGM 2024 Breakfast

Padre Room and Breezeway Foyer

Monday-Wednesday 7:00 a.m. to 8:00 a.m.

ICBGM 2024 Breaks

Padre Room and Breezeway Foyer

AM Coffee Break:

Monday-Wednesday 10:00 a.m. to 10:30 a.m.

PM Coffee Break:

Monday- Wednesday 3:00 p.m. to 3:30 p.m.

ICBGM 2024 SCS Monday Evening

Welcome Reception

Hilton Garden Inn Breezeway Foyer

Monday, July 1, 2024

5:30 p.m.-6:30p.m.

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Keynote

Keynote

“MODELING AND SIMULATION” – CAN BOND GRAPHS HELP US TEACH BOTH?

Professor Geoff Rideout

Department of Mechanical Engineering, Memorial University, St. John’s, Canada

Location: **Padre Room**

When: **July 3, 2024, 8:30 a.m. to 10:00 a.m.**



Biography: GEOFF RIDEOUT is Professor and Head of Mechanical Engineering at Memorial University in St. John’s, Newfoundland, Canada. Prior to becoming Department Head, he was Director of First Year Engineering, and Acting Associate Dean of Undergraduate Studies. He holds a Ph.D. in Mechanical Engineering from the University of Michigan, a Master’s in Applied Science from Queen’s University in Ontario, Canada; and a Bachelor’s Degree in Mechanical Engineering from Memorial University. He was a Visiting Scholar at the Department of Engineering, Nottingham Trent University, Clifton, UK during academic year 2022-23. He has taught at the community college and university levels, receiving teaching awards from Memorial University, Professional Engineers and Geoscientists of Newfoundland and Labrador, and the Atlantic Association of Universities. Professor Rideout has industry experience in building systems consulting, manufacturing, and military systems.

His research interests include proper modeling, simulation-based design, applications of vibration, engineering education, and vehicle dynamics. His team has used bond graphs to facilitate research on non-destructive evaluation of electricity transmission poles, active vehicle chassis control, and oil well drilling vibrations.

Abstract: The phrase “modeling and simulation” is commonly used to describe the process by which we turn the messy, non-linear physical world into a manageable mathematical problem, the solution of which is a prediction of how a portion of that world will behave. For almost two decades I have been the instructor for a course in “Modeling and Simulation of Dynamic Systems”. Only recently have I begun to reflect upon what the “and” implies – that modeling and simulation are two different things, presenting an obligation to teach both.

Keynote (Continued)

To what extent do or can modeling and simulation exist separately? Are they so intertwined that they ought not to be separated? Are bond graphs a modeling or a simulation tool? How can bond graphs help us ensure that both modeling and simulation are given an appropriate amount of attention in education?

The bond graph method, through its visual indications of power flow paths and potential equation formulation difficulties, captures the transition between the modeling and simulation stages. In that stage where modeling and simulation must occur conjointly, bond graphs allow model complexity changes to be immediately assessed in terms of simulation implications. The final model choice is often guided by the available effort and resources to simulate it. Despite calling attention to this in my lectures, I have recently concluded that teaching bond graphs guarantees only that I have covered the “simulation” portion. There is a need for greater consciousness of coaching students to systematically develop and practice a core set of skills related to “modeling” specifically.

The talk will begin by using my course, which I feel is a typical “bond graph course”, as a case study to show the lack of explicit modeling education. I will examine how modeling is defined from both bond graph and non-bond graph perspectives, and identify (with the expert and experienced audience’s input) a core set of skills that defines a “modeler”. I will share lessons learned from a course project intended to get the students to do self-study on a bond graph domain not formally covered in lectures; to build a model using their past knowledge and intuition, to discuss it with peers, and ultimately to determine a class-wide consensus model topology and set of parameters that optimizes performance for a variety of system configurations.

Students struggle initially with the cognitive overhead of learning the sometimes-unintuitive bond graph language. I will share experiences on the difficulties and rewards they feel bond graphs present, some techniques I have used to aid students, and the aspects of bond graph construction and usage that students find most confusing. Bond graphs appear to make three types of system simulations especially accessible: multi-body dynamics, electrical circuits, and continuous system vibration. As modeling and simulation is an important part of graduate student education, I will show how my students and I have used bond graphs to tackle a variety of research problems in vehicle dynamics, drilling for natural resources, and vibration-based non-destructive testing.

My hope is that this address will start new conversations about what distinguishes modeling from simulation, and how we can positively impact student interest and ability in both, thereby helping the next generation of problem-solvers choose an appropriate model and use it responsibly.



JULY 2, 2024-8:00PM SAN DIEGO CITY LIGHTS NIGHT TOUR

Event Description HeadingYour San Diego City Lights Night Tour Includes:

- Hop aboard the Trolley for a picturesque evening you won't forget
 - Open-air sightseeing perfect for taking pictures
 - Approximately 1 hour and 40-minute tour
 - See San Diego's famous sights illuminated at night
 - Take in romantic views of the city and cruise past notable landmarks
 - Highlights include The Historic Gaslamp Quarter, Balboa Park, [Coronado's Ferry Landing](#), USS Midway and more
- FEE: \$45.00**

Sign up is required by Monday, July 1, 4:00p.m.



THE SOCIETY FOR
MODELING & SIMULATION
INTERNATIONAL™

San Diego sparkles at night, and what better way to see it than with Old Town Trolley Tours!

Hop aboard our trolley for a picturesque evening you won't forget.

**Boarding:
500 Kettner Blvd., Seaport Village. Next to Malibu Farms. Paid parking is available.**

How to get there: Old Town Shuttle Service to Seaport Village: We offer a complimentary shuttle to Seaport Village from Old Town at 4010 Twiggs Street. At the end of your tour, the trolley will shuttle you back to Old Town. For more information, call 619-298-8687. Shuttle service from Old Town departs one hour prior to your tour time.

THE SOCIETY FOR MODELING AND SIMULATION INTERNATIONAL

11315 Rancho Bernardo Road, Ste. 139
San Diego, CA 92127
858-277-3888

www.scs.org
July 2, 2024
8:00 p.m.

Agenda

ICBGM Agenda

Monday, 1 July 2024

Session 1: **BOND GRAPH FUNDAMENTALS**

8:30 a.m. – 10:00 a.m.

**Welcome: General Chair: Professor José J. Granda, USA and
Program Chair: Professor Jesus Felez, Spain**

- A Bibliometric Analysis Of Bond Graph Publications by *Jesus Felez*
- A Bond Graph based Optimal Causality Assignment method for MATSAT- A MATLAB Structural Analysis Toolbox by *Arnold A. Fernandes and Jonathan W. Kimball*

10:00 a.m.—10:30 a.m. COFFEE BREAK

Session 2: **BOND GRAPH VEHICLES I**

10:30 a.m. – 12:00 p.m. Chair: Rebecca Margetts, United Kingdom

- Electric Vehicle Powertrain Modeling: A Bond Graph Approach for Analyzing and Simulating Electric Motors by *Siddhesh Yadav, Jungseop Son and Francis Assadian*
- Improving Vehicle Ride Comfort Through Seat Control Using Bond Graphs by *Ali Akbari and Donald Margolis*

12:00 p.m.—1:30 p.m. LUNCH ON YOUR OWN

Session 3: **VEHICLES II**

1:30 p.m. – 3:00 p.m. Chair: Ali Akbari, USA

- Modeling a Three-Wheel Vehicle and Corresponding Control Devices Using Bond Graphs by *Yupeng Zhang and Donald Margolis*
- Modelling a three-Wheeled Electric Car by *Rebecca Margetts*

3:00 p.m.—3:30 p.m. COFFEE BREAK

Session 4: **BOND GRAPHS IN EDUCATION**

3:30 p.m. – 5:30 p.m. Chair: Donald Margolis, USA

- Project-Based Heat Transfer Learning for Modeling and Simulation Courses by *Geoff Rideout*
- Systembondgraphs.Jl: A Composable Energy-Based Modelling System For Mechatronics And Systems Analysis In Education by *Carson Farmer and Hector E. Medina*

ICBGM Agenda

Tuesday, 2 July 2024

Session 5: **BIOMEDICAL APPLICATIONS**

8:30 a.m.– 10:00 a.m.

Chair: Eilif Pedersen

- Mathematical Modeling of the Impact of Diabetes Mellitus on a Neovascularized Human Blood Vessel by *Marcos Augusto Moutinho Fonseca¹, Ana Karoline Almeida da Silva¹, Gustavo Adolfo Marcelino de Almeida Nunes¹, Luciana Alves Fernandes, Ronei Delfino da Fonseca Campos, Rafael Mendes Faria¹, Lindemberg Barreto Mota da Costa, Suélia de Siqueira Rodrigues Fleury Rosa.*
- Momentum Analysis in Accident Reconstruction using Matrix Methods and Bond Graph Technology by *Jose J. Granda*

10:00 a.m.—10:30 a.m. COFFEE BREAK

Session 6: **MECHANICAL SYSTEMS AND CONTROL**

10:30 a.m.– 12:00 p.m.

Chair: Marcos Augusto Fonseca, Brazil

- Simplified Bond Graph Model of a Multi-Energy Domain Impact Tool for Vibration Control and Impact Optimization by *Donald Margolis*
- Bond-Graph Compatible forms of Kane's Equations and Bond-Graph Representation of Ideal Constraints by *James Phillips*

12:00 p.m.—1:30 p.m. LUNCH ON YOUR OWN

Session 7: **ROBOTICS**

1:30 p.m.– 3:00 p.m.

Chair: Yupeng Zhang, USA

- Comprehensive Dynamic Modelling of Spatial Cable-Driven Parallel Robot using Bond Graph Approach by *Bharath Raja Bhoopal Pedapudi and Pushparaj Mani Pathak*
- Modelling of Marine Scrubbers Using Bond Graph Method by *Yuan Tian and Eilif Pedersen*
- Model Based Hybrid Scheme Of Modeling And Control Of 2-DOF Flexible Arm Underwater Robot Manipulator by *Sunil Kumar*

3:00 p.m.—3:30 p.m. COFFEE BREAK

Session 8: **ICBGM International Program Committee Meeting**

3:30 p.m.– 5:00 p.m.

Chairs: José J. Granda and Jesus Felez

Organization of ICBGM'2026

ICBGM Agenda

Wednesday, 3 July 2024

Keynote Plenary Session Professor Geoff Rideout, Memorial University, Canada

8:30 a.m. – 10:00 a.m.

Chairs: José J. Granda and Jesus Felez

Presentation: “Modeling and Simulation” -Can Bond Graphs Help us Teach Both?

Author: Professor Geoff Rideout

10:00 a.m.—10:30 a.m. COFFEE BREAK

Session 10: **MULTI-ENERGY SYSTEMS**

10:30 a.m. – 12:00 p.m.

Chair: Pushparaj Mani Pathak, India

- Energy Conservation and Co-simulation: Background and Challenges by *Severin Sadjina, Lars Tandle Kyllingstad, Eilif Pedersen and Stian Skjong*
- Truck Bond Graph Modelling Integrating Both Multibody and Functional Approaches by *Amine Laaribi, Damien Eberard and Wilfrid Marquis-Favre*

Notes

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The City of Old Town San Diego



Things to do in Old Town

Old Town Market San Diego

4010 Twiggs St., San Diego, CA 92110

+1 619-278-0955

<https://www.oldtownmarketsandiego.com/>

Take a trip back in time to experience the California of the 1850s, when Europeans first made their way to what would become San Diego. Today's Old Town offers unique opportunities for boutique shopping, one-of-a-kind dining, and numerous other must-see points of interest. Make time to explore the Old Town Historic Park, which is an official California Historical Landmark as well as being listed on the National Register of Historic Places.

Bazaar Del Mundo

4133 Taylor St, San Diego, CA 92110

+1 (619) 296 3161

<https://bazaardelmundo.com/bdm/old-town-san-diego/>

When you walk down the street in the bazaar, you are taken to the Old Mexican world with various shops lined along and offering diversified collectibles from around the world. This is a shopping paradise in San Diego. Whatever one would be looking for, you would definitely find it here. With twinkling lights and Mexican vibrant colors around, the shops are packed with exclusive items perfect for creating our memories or to give to our friends and families as a token of our love and remembrance. The shoppers have a variety of choices and shop to choose in Bazaar Del Mundo market. From home accessories or collectibles to fashionable dresses and clothes, shoppers can also choose hand crafted art and crafts. Not only these, the Bazaar Del Mundo has something to offer for everyone, be it colorful tabletop linens or kitchen accessories or cookbooks to the traditional crafts and folk art from Mexico or imported ceramics from around the world. For the jewelry lovers, this place is a Shangri-La for shopping, one can get all sorts of traditional Mexican jewelry like the famous Taxco Sterling silver jewelry or Huichol Beaded jewelry to the ones designed by some famous designers. All the textile and handicrafts available in the shops in the Bazaar are just stunning and the colors and variety of their merchandise makes it a treat.

The Whaley House Museum

1400 Patten Rd., Lookout Mountain, GA 30750

+1 866-820-2531

<https://www.trolleytours.com/san-diego/whaley-house>

Overwhelmingly praised as the first of its kind and the finest home in Southern California, the Whaley House was a central pillar of the 19th Century Old Town community. Besides being the Whaley family home, it was also San Diego's first commercial theater, the county courthouse, and a general store. The legendary Whaley House is widely regarded as one of the most iconic landmarks in San Diego. From its rich Greek Revival architecture style and authentic decor to its mysterious past and unrivaled haunted pedigree, it's no wonder this home attracts visitors from all over the world. Spend the day exploring the family home of Thomas Whaley and be transported back to San Diego life in the 1800s. Grab a memorable souvenir at the Verna House, located directly behind the Whaley House, and stick around for a delicious meal at the New Orleans Creole Cafe. See what makes the famed Whaley House an absolute San Diego must do experience!

Things to do in Old Town

Toby's Candle & Soap Shop

2645 San Diego Ave, San Diego, CA 92110

+1 619-297-5426

<https://www.tobyscandles.com/>

Make your very own kaleidoscope candle! Whether you are a local, visiting San Diego, or across the country, our candle making kits are available both in store and online. You can choose from a variety of colorfully scented wax cubes to create a unique pillar candle of your own.

San Diego Tour: Hop-on Hop-off Trolley

Old Town Stop: 4010 Twiggs St., San Diego, CA 92110

+1 866-753-8064

<https://www.trolleytours.com/san-diego>

This San Diego hop-on hop-off trolley tour provides an easy and affordable way to get around the city. This tour helps you avoid the hassle of finding and paying for parking. The trolley tour, available as a silver, gold, or platinum pass, allows you to travel your own itinerary at your own pace. Along with 11 stops around the city, it also includes guided commentary and large, open windows. Stop A is located at the entrance to the Historic State Park and Old Town Market, featuring over 40 specialty gift shops.

Cousin's Candy Shops

2711 San Diego Ave, San Diego, CA 92110

+1 619-297-2000

<https://cousinscandyshop.com/>

Judy McCord, the owner of Old Town Cousins Candy Shop began her candy adventures after taking an early retirement as a flight attendant. In 1987, she bought an old fashioned candy shop in a Historic, Tourist town in Montana. Some years later, wanting to expand her candy horizons, she became a concessionaire at Old Town State Historic Park in San Diego, CA. She travelled between the two shops for many years, but recently sold her shop in Montana and focuses all her energies on the Candy Shop in Old Town in San Diego, CA. She believes you can not find a better business to be in. People are always happy buying candy! Every day is a "sweet day"!

Mormon Battalion Historic Site

2510 Juan St, San Diego, CA 92110

+1 619-298-3317

<https://www.churchofjesuschrist.org/learn/historic-sites/california/mormon-battalion-historic-site?lang=eng>

The Mormon Battalion Historic Site is a historic site in Old Town, San Diego, California, in honor of the members of The Church of Jesus Christ of Latter-day Saints who served in the United States Army's Mormon Battalion during the Mexican-American War of 1846-1848.

Restaurants in Old Town

El Agave Restaurant & Tequileria

2304 San Diego Ave B, San Diego, CA 92110-2895

+1 619-220-0692

<https://elagave.com/>

The best place in San Diego to enjoy authentic Mexican Cuisine is El Agave Restaurant and Tequileria, located within our Tequila Museum where you can try over 2000 different tequilas. It is the perfect setting to experience the true flavor of Mexico. If you are looking for a great place for a business lunch, romantic dinner or just to enjoy a fine Tequila with friends or someone special, we are ready to serve you. Do not just go out to an ordinary restaurant, join us for a unique experience.

Tequila Factory Restaurant

2467 Juan Street, San Diego, CA 92110

+1 619-260-8124

<https://oldtowntequilafactory.com/>

The ever popular Old Town Tequila Factory Restaurant and Cantina in San Diego is a charming hillside retreat overlooking historic Old Town San Diego "is a terrific spot to enjoy great Margaritas and delicious Authentic Mexican Food from scratch in San Diego. Freshly made Tortillas and Guacamole, Giant Margaritas, Musical and Breathtaking Views from Old Town to Mission Bay. . . this festive Mexican Restaurant in San Diego has Rooftop Dining and Always FREE Parking!

Pizza Bella

2707 Congress St. San Diego, CA 92110

+1 619-692-4333

<https://www.pizzabellasd.com/>

Pizza Bella Italian Bistro is Old Town's Best Kept Secret. Its award-winning pizza has been recognized as "Best Pizza in America" by many and called "somewhat of a Mecca for serious pizza and pasta aficionados" by The San Diego Union Tribune. Come to Old Town and see for yourself what makes Pizza Bella Italian Bistro one of San Diego's most exciting Italian restaurants.

Fiesta de Reyes

2660 Calhoun Street, San Diego, CA 92110

+1 619-297-3100

<https://www.fiestadereyes.com/>

Whether it's the authentic Mexican food of Casa de Reyes, the bold yet sophisticated fare of Barra Barra or a unique gift for someone special that brings you, we invite you, your friends and your family to experience what Fiesta de Reyes is all about: great food, fantastic atmosphere and an experience to remember.

Restaurants in Old Town

Jack & Giulios Italian Restaurant

2391 San Diego Ave., San Diego, CA 92110

+1 619-294-2074

<https://www.jackandgiulios.com/>

Jack and Giulio's Italian restaurant has remained a favorite of San Diegans for many years. This popular restaurant, formerly known as Giulio's of Pacific Beach, has proudly served the "Best Scampi" since 1961. In addition to this popular dish, this family-owned and operated restaurant offers many homemade pastas, veal, poultry, beef, and seafood specialties.

Old Town Mexican Cafe

2489 San Diego Ave, San Diego, CA 92110-2839

+1 619-297-4330

<https://oldtownmexcafe.com/>

Old Town Mexican café has been a staple in San Diego for more than 40 years. Many people have called their handmade tortillas "the best in the world". Their most popular dishes are Molcajete, Carnitas, ½-rotisserie chicken, Pozole, ½ rack of ribs, Guacomole, Carne Asada Dinner.

Casa de Freds Tacos y Tequila

2470 San Diego Ave, San Diego, CA 92110-2883

+1 619-858-8226

<https://fredsoldtown.com/>

Fred's is the place for amigos to have a great time while enjoying quality food, fresh margaritas and a festive atmosphere. They are the only dog-friendly restaurant in Old Town and have a menu designed with your doggies in mind. Both the human and doggie menus offer a wide variety of delicious, Baja-infused selections that are made from fresh, high-quality ingredients. With food and drink specials every single day starting at 3PM, Fred's has plenty of options that will keep your tummies, glasses and pockets full.

Harney Sushi

3964 Harney St, San Diego, CA 92110-2825

+1 619-295-3272

<https://www.harneysushi.com/>

Harney Sushi is San Diego's premier sushi bar and restaurant experience. As fresh and it gets, as imaginative as you want. This is the place where experimentation mixes with celebration, where fine dining service and knowledge fuses with beaming personality and style. Besides having San Diego's only sake bar, Harney boasts more than 40 award winning wines, 30 of the world's best sakes, a private VIP booth and over 30 gourmet specialty rolls named and created by loyalists. Music for your mouth, sushi for your soul. We are proud to offer our Southern California Based, Award-winning, sustainable sushi cuisine since 2001.



THE SOCIETY FOR
MODELING & SIMULATION
INTERNATIONAL

Serving M&S for Over **60** Years



WORLDWIDE LEADER IN MODELING & SIMULATION

Serving individuals and organizations in more than 150 countries.



For over 60 years, SCS has set the standard as the first society devoted solely to the advancement of modeling and simulation. Our objective is to promote M&S as a discipline and profession through continuous research and education. We provide M&S professionals with a dynamic community and forum to publish, present, and discuss new results, developments, applications, and lessons learned, enabling the exchange between and mutual support of industry, government, and academia.

SCS serves engineers, scientists, managers, educators, business professionals and students from all around the world.

Opportunities for skill development and advancement include:

Membership

Take advantage of networking opportunities, access publications and journals, share your research findings and more.

Publications

Get up to date M&S information from our journals.

Conferences

Participants may present papers, attend technical sessions, visit exhibit areas, interact with vendors and network with other M&S professionals.

Education

SCS strives to help individuals move towards making a transition from a field of Modeling and Simulation to a profession.

*SCS is a 501(c)3 non-profit organization with four primary business areas: membership, publications, conferences and education.

www.scs.org | P: (858) 277-3888 | F: (858) 277-3930 or (858) 633-1559 | Email: scs@scs.org