



2019 Annual Meeting Program

MIND and *Machine*

January 9-12, 2019
*Four Seasons Resort
Scottsdale at Troon North
Scottsdale, Arizona*

Annual Meeting
Program Co-Chairs
Charlene Blake, MD, PhD
Matthew Levin, MD

#STA19Scottsdale



Society for Technology in Anesthesia
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Meeting Accreditation Information

Activity Overview

The Society for Technology in Anesthesia (STA) 2019 Annual Meeting will provide a forum for discussion of emerging innovations and technology in anesthesia with a particular emphasis on how data and data science are being used to drive and support these innovations. Topics covered throughout the program include the latest advances in automated drug delivery, innovations in education through use of technology, machine learning, anesthesia EHRs, the role of entrepreneurs in medical device technology and cybersecurity in healthcare.

Target Audience

This live activity is designated for a national and international audience of physicians, engineers and industry members, as well as other practitioners in the field of anesthesia seeking an update on the current and future state of anesthesia technology.

Educational Objectives

As a result of participation in this CME activity, learners should be able to:

- Describe the current limitations of medical device cybersecurity and summarize the research being done in this area.
- Describe examples of innovations in resident education utilizing virtual reality and simulation.
- Summarize the latest advances in closed loop systems and automated drug delivery.
- Understand the strengths and limitations of next generation anesthesia EHRs.
- Describe the type of algorithms that are commonly used in machine learning in the healthcare space.
- Discuss the role that entrepreneurs can play in advancing medical device technology for clinicians and patients.
- Summarize current research being pursued by anesthesiologists and engineers in both industry and academic settings.

Barriers to change:

- Reduced ability to implement innovative or cutting-edge technologies in an era of increasing EHR consolidation and centralization.

Accreditation Statement

This activity has been planned and implemented in accordance with the accreditation requirements and policies of the Accreditation Council for Continuing Medical Education (ACCME) through the joint providership of Amedco and the Society for Technology in Anesthesia (STA). Amedco is accredited by the ACCME to provide continuing medical education for physicians.

Credit Designation Statement

Amedco designates this live activity for a maximum of **17.25 AMA PRA Category 1 Credits™**. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

Pre-Conference Sessions

Challenges and Opportunities in Developing Anesthesia Products (for Industry ONLY)

Wednesday, January 9, 2019 • 0800 - 1200

The Challenges and Opportunities Course started over ten years ago as an introduction to the practice of anesthesia for non-clinical STA members. Through the years it has evolved to its current form where STA industry members and anesthesiologists meet to discuss current trends in anesthesia practice and product development.

This half day course is planned for industry by the scientist and researcher members of the STA involved in designing, testing and marketing new developments and products to anesthesiologists. Basic talks will provide participants with

an understanding of the practice of anesthesiology and how to recognize opportunities for new products. The session will include mini descriptions and group discussions on key aspects of the clinical specialty, including anesthesia work-flow: what works and what's needed.

Discussions are driven by participant interests regarding all aspects of anesthesia care and practice. Faculty for the course are board-certified anesthesiologists from multiple geographic locations, practice settings and varieties of anesthesia care. Prior sessions have focused on the anesthesia machine, infusion pumps, AIM systems and Big Data, as well as the basics for those who are just getting acquainted with the specialty.

Work groups of anesthesiologists and participants will address challenges in the design process and how these can be overcome to market a successful product. This will be a highly interactive and stimulating workshop. **OPEN TO INDUSTRY PARTICIPANTS ONLY.**

Schedule of Events

Wednesday, January 9, 2019

0700-0800	Challenges & Opportunities Registration (FOR INDUSTRY ONLY)
0800-1700	Exhibitor Registration & Setup
0800-1200	Challenges & Opportunities in Developing Anesthesia Products (FOR INDUSTRY ONLY) David Feinstein, MD, Norma Sandrock, MD, John Paulowski, MD, PhD, Jesse Ehrenfeld, MD, MPH, Christopher Quartararo, MD, Jeffrey Feldman, MD

1800-2000 Registration & Welcome Cocktail Reception

Thursday, January 10, 2019

0700-0800	Registration & Breakfast
0800-0815	Welcome Address Kai Kuck, PhD, Charlene Blake, MD, PhD & Matthew Levin, MD

Session 1: Keynote Address

Moderator: Charlene Blake, MD, PhD & Matthew Levin, MD

0815-0930 Medical Device Cybersecurity
Kevin Fu, PhD

0930-1000 Break with Exhibitors & Abstracts

Session 2: Innovations in Technology in Medical Education (The Machine Makes the Mind)

Moderator: Daniel Katz, MD

1000-1030	Screen Based Simulation and Medical Education Anjan Shah, MD
1030-1100	The Utility of the Virtual Environment in Medical Education Cole Sandau
1100-1130	Augmented Reality for Medical Education Eric Bauman, PhD, FSSH, RN
1130-1200	Panel Discussion
1200-1315	Luncheon

Session 3: Emerging Device Technologies (The Mind Makes the Machine)

Moderator: Jorge Galvez, MD, MBI

1315-1345	Developing Closed-Loop Systems and Machine Learning Algorithms for Clinical Use in Perioperative Care Maxime Cannesson, MD, PhD
1345-1415	Redesigning Adult Monitors for Use in Pediatric Anesthesia Peter Szmuk, MD

1415-1445 Closed-Loop Anesthesia Delivery Devices: Invention or Innovation?
Bahram Parvinian, MSc

1445-1515 Panel Discussion

1515-1545 Break with Exhibitors & Abstracts

1545-1615 Posters in a Minute: Moderated Poster Summaries Group A
Moderator: Robert Freundlich, MD, MS

Session 4: Abstract Awards & Presentations

Moderator: Thomas Hemmerling, MD, MSc, DEAA

1615-1640 Excellence in Technology Award Presentation
Thomas Hemmerling, MD, MSc, DEAA

1640-1705 Best Clinical Application Award Presentation
Thomas Hemmerling, MD, MSc, DEAA

1705-1730 Best of Show Award Presentation
Thomas Hemmerling, MD, MSc, DEAA

Friday, January 11, 2019

0700-0800 Registration & Breakfast

Session 5: Next-Gen Anesthesia AIMS/EHR (The Machine Has No Mind)

Moderator: Patrick McCormick, MD, MEng

0800-0830 Situational Awareness Pathways and Data Visualization
Patrick Guffey, MD, MHA

0830-0900 Integration Across Periop—Past, Current and Future
Jonathan Wanderer, MD, MPhil

0900-0930 Anesthesiologist Augmented Intelligence
Patrick McCormick, MD, MEng

0930-1000 Panel Discussion

1000-1030 Break with Exhibitors & Abstracts

Session 6: Deep Learning/Machine Learning (The Machine Has a Mind)

Moderator: Ira Hofer, MD

1030-1100 What is Machine Learning and How it Can Be Leveraged in Anesthesiology?
Christine Lee, BS

1100-1130 Use of Machine Learning to Predict Post-Induction Hypotension
Samir Kendale, MD

1130-1200 Framework for Understanding Types of Artificial Intelligence Applications and Examples within Perioperative Care
Ira Hofer, MD

Schedule of Events *continued*

Friday, January 11, 2019 *continued*

1200-1230	Panel Discussion
1230-1330	STA Business Luncheon & 2019 J.S. Gravenstein Award Presentation <i>Kai Kuck, PhD & Jan Ehrenwerth, MD</i>
1330-1400	Posters in a Minute: Moderated Poster Summaries Group B Moderator: Clyde Matava, MBChB, DA, MMed

Session 7: Research Grant Presentations

Moderator: Thomas Hemmerling, MD, MSc, DEAA

1400-1435	2017 Neurowave Research Grant Recipient Presentation <i>Soodeh Ahani, PhD</i>
1435-1510	2018 Neurowave Research Grant Recipient Presentation <i>Clyde Matava, MBChB, MMed, MSc</i>
1510-1530	Break with Abstracts

Session 8: Concurrent Sessions

1530-1730	Young Researchers Workshop <i>Christine Lee, MS, Maxime Cannesson, MD, PhD, Thomas Joseph, MD, PhD</i>
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The objective of this workshop is to bring together a community of young research scientists. In this community, researchers will share their individual research experience, as well as develop collaborative relationships to further promote the advancement of technology in anesthesia.

1530-1730	Technology in Education: Hands-on Session <i>Daniel Katz, MD</i> In this hands-on session attendees will get the chance to try out the virtual reality ("Fire in the OR") and tablet based ("Liver Transplant") simulators presented in Session 2. In addition, there will be a development workstation set up, where attendees can play with the tools used to make the simulations.
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1730-1930	Cocktail Reception
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Saturday, January 12, 2019

0730-0815	Registration (Only Coffee Provided)
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Session 9: STA Engineering Challenge

Moderator: Jeffrey Mandel, MD, MS

0815-0945	Engineering Challenge <i>Jeffrey Mandel, MD, MS</i>
0945-1015	Posters in a Minute: Moderated Poster Summaries Group C Moderator: John Pearson, MD
1015-1030	Break with Abstracts

Session 10: Entrepreneur Session: Anesthesiologist Idol (Mind vs. Mind)

Moderator: Brian Rothman, MD

1030-1230	Judges: Maxime Cannesson, MD, PhD; Thomas Hemmerling, MD, MSc, DEAA; Joan Spiegel, MD, Contestants: Jack Neil, MD; Eilon Gabel, MD; Cyrus Razavi, BM, BCh, FRCA
1230	Meeting Adjourned

Invited Faculty

Soodeh Ahani, PhD <i>University of British Columbia</i>	Christine Lee, BS <i>University of California, Irvine</i>
Eric Bauman, PhD, FSSH, RN <i>Capitol Group</i>	Matthew Levin, MD 2019 Annual Meeting Co-Chair <i>Icahn School of Medicine at Mount Sinai</i>
Charlene Blake, MD, PhD 2019 Annual Meeting Co-Chair <i>University of California, San Francisco</i>	Jeffrey Mandel, MD, MS <i>Hospital of the University of Pennsylvania Perelman School of Medicine</i>
Maxime Cannesson, MD, PhD <i>University of California, Irvine</i>	Clyde Matava, MBChB, MMed, MSc 2019 Abstract Co-Chair <i>Hospital for Sick Children University of Toronto</i>
Jesse Ehrenfeld, MD, MPH <i>Vanderbilt University Medical Center</i>	Patrick McCormick, MD, Meng <i>Memorial Sloan Kettering Cancer Center</i>
David Feinstein, MD <i>Beth Israel Deaconess Medical Center</i>	Jack Neil, MD <i>MedStream, Inc</i>
Jeffrey Feldman, MD <i>Children's Hospital of Philadelphia</i>	Bahram Parvianian, MSc <i>Federal Drug Administration Center for Devices and Radiological Health</i>
Robert Freundlich, MD, MS 2019 Abstract Co-Chair <i>Vanderbilt University Medical Center</i>	John Pawlowski, MD, PhD <i>Beth Israel Deaconess Medical Center</i>
Kevin Fu, PhD <i>Virta Labs University of Michigan</i>	John Pearson, MD <i>Beth Israel Deaconess Medical Center</i>
Eilon Gabel, MD <i>University of California, Los Angeles</i>	Christopher Quartararo, MD <i>Winchester Anesthesia Associates</i>
Jorge Galvez, MD, MBI <i>Children's Hospital of Philadelphia</i>	Cyrus Razavi, BM, BCh, FRCA <i>NIAA Health Services Research Center</i>
Patrick Guffey, MD, MHA <i>University of Colorado</i>	Brian Rothman, MD <i>Vanderbilt University Medical Center</i>
Thomas Hemmerling, MD, MSc, DEAA <i>McGill University</i>	Cole Sandau <i>Founder Optera Group</i>
Ira Hofer, MD <i>Ronald Reagan UCLA Medical Center</i>	Norma Sandrock, MD <i>Beth Israel Deaconess Medical Center</i>
Thomas Joseph, MD, PhD <i>Hospital of the University of Pennsylvania Perelman School of Medicine</i>	Anjan Shah, MD <i>Icahn School of Medicine at Mount Sinai</i>
Daniel Katz, MD <i>Icahn School of Medicine at Mount Sinai</i>	Joan Spiegel, MD <i>Beth Israel Deaconess Medical Center</i>
Samir Kendale, MD <i>New York University Langone Health</i>	Peter Szmuk, MD <i>UT Southwestern</i>
Kai Kuck, PhD President, STA <i>University of Utah</i>	Jonathan Wanderer, MD <i>Vanderbilt University Medical Center</i>

Meeting Registration Information

ONLINE REGISTRATION www.stahq.org

Online registration accepted until Tuesday, January 2, 2019 – Limited Onsite Registration

MAIL OR FAX REGISTRATION FORM

This is how your name will appear on your name badge. *Required fields.

*FIRST NAME: [] *LAST NAME: []

PROFESSION: [] *HIGHEST DEGREE(S): []

*COMPANY/INSTITUTIONAL AFFILIATION: []

*ADDRESS: []

*CITY: [] *STATE/PROVINCE: [] *ZIP: [] *COUNTRY: []

*PHONE: [] FAX: []

*EMAIL ADDRESS: []

Special Needs: Hearing Impaired Sight Impaired Other: []
 Dietary (Please Specify) []

REGISTRATION FEES

Registration fee includes course materials, 2 continental breakfasts, 2 lunches and 2 cocktail receptions.

	<u>Early Bird by 11/15/18</u>	<u>By 12/15/18</u>	<u>After 12/15/18</u>
<input type="checkbox"/> STA Member Registration (membership dues must be paid for 2019)	\$475	\$500	\$575
<input type="checkbox"/> *Non-Member Registration	\$575	\$600	\$675
<input type="checkbox"/> Resident Registration	\$50	\$50	\$50

*Non-member fee includes 1 year of membership to qualifying physicians.

A LA CARTE ITEMS

- Additional Wednesday Reception Event Ticket..... \$50
- Additional Friday Reception Event Ticket..... \$50
- Spouse/Guest Registration..... \$325
- 2019 Membership Dues Renewal..... \$100

SUBTOTAL: []

PAYMENT MUST ACCOMPANY REGISTRATION TOTAL DUE: []

METHOD OF PAYMENT

The following methods of payment are acceptable for the registration fee:

- Check:** Made payable to STA. **There is a \$25 returned check fee.**
 Check Included
- Credit Card Payments:** Visa MasterCard Discover AMEX

NAME ON CARD: []

CARD #: [] SECURITY CODE: [] EXP. DATE: []/[]/[]

SIGNATURE: _____

Paper Registrations
By Fax or Mail
(SEE CONTACT INFORMATION
BELOW)

If you are unable to register online please fax or mail your paper registration form.

Onsite Registration
Online registration accepted until January 2, 2019. After January 3rd limited onsite registration is available.

Registration Cancellation
All cancellations must be in writing and sent via U.S. mail, email or fax. Fee for cancellations postmarked or date stamped before **January 2, 2019** will be completely refunded with an administrative fee of \$25. **NO REFUNDS WILL BE MADE AFTER JANUARY 2, 2019.**

Questions? Contact Us:
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FAX: 414-276-7704

PLEASE NOTE: Registration is not complete until you receive a confirmation email for your pre-registration. If you do not receive this email within 5-7 days of registration, please contact us at 414-389-8600.

It is recommended to bring your confirmation of registration with you to the conference.



Society for Technology
in Anesthesia



#STA19Scottsdale

STA 2019 Annual Meeting

Four Seasons Resort
Scottsdale at Troon North
10600 E. Crescent Moon Dr.
Scottsdale, Arizona

Room Rate: \$299/night

Make Your Reservation:
(480) 515-5700

Reservation Deadline:
December 18, 2018

Website:

www.fourseasons.com/scottsdale

MIND and Machine

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