



*13<sup>th</sup> Annual Meeting of the*  
American Society of

# Functional Neuroradiology

**November 3 – 5, 2019**

Hilton San Francisco Financial District  
San Francisco, CA

*23.0 AMA PRA Category 1 Credit(s)<sup>TM</sup>*

**Optional BOLD Functional MRI  
Hands-On Workshop**

**November 2, 2019**

*7.75 AMA PRA Category 1 Credit(s)<sup>TM</sup>*

Workshop attendance is limited to the first 30 Registrants



Please join me November 3-5, 2019 for the American Society of Functional Neuroradiology's (ASFNR) 13th Annual Meeting in San Francisco, California, and experience the best of San Francisco's vibrant culture at the Hilton San Francisco Financial District hotel. The Hilton features a prime location in downtown San Francisco, just across the street from Chinatown.

Come see how we are debunking the misconception that the ASFNR only deals with functional MRI. This is not true. ASFNR encompasses everything that is cutting edge and on the forefront of neuroimaging, including:

- Artificial intelligence and machine learning in personalized medicine, image quality, and its application to diagnostic image interpretation
- An AI challenge that will see different academic groups and companies compete around detecting urgent abnormalities on head CTs
- Emerging imaging technologies such as PET-MRI, 7T imaging, magnetic particle imaging, and MR-guided focused ultrasound
- 3D printing
- Perfusion imaging, including DSC, DCE, ASL, and intravoxel incoherent motion for stroke and brain tumor
- Advances in diffusion MR imaging including microstructural and microdynamic MR and updates on BOLD fMRI and resting state fMRI, including but not limited to traumatic brain injury applications
- Neuropsychiatric MR imaging including addiction, connectivity, neurogenetics, and transcranial magnetic stimulation
- New insights into neurodegeneration, including the glymphatic system, cerebrovascular reactivity, iron, and microglia
- Emerging technology from rapid MR acquisitions, metabolic imaging and bioscales, and myelin mapping to advanced neuroimaging of the spine
- Pediatric neuroimaging centered on normal and abnormal connectivity from the neonatal period through adolescence
- Advanced neuroimaging for head and neck, and spine pathology
- Study groups about diffusion/perfusion imaging, BOLD imaging, AI and advanced pediatric neuroimaging

Learn the latest in functional neuroradiology and interact with your colleagues who share your interest of advanced neuroimaging by attending the ASFNR Annual Meeting, which will feature an in-depth and comprehensive update on advanced neuroimaging. As you can see from the list above, the topics covered appeal to a broad range of neuroradiologists, neurologists, neurosurgeons, physicists, neuropsychiatrists and psychologists, cognitive neuroscientists, biomedical engineers, clinical and research fellows, residents, doctoral and postdoctoral students, and radiology technologists.

The 2 ½ day meeting features a series of focused sessions with didactic lectures, case presentations, hot topic debates and panel discussions by a roster of nationally and internationally recognized experts, as well as original research papers and posters. Compare the performances of several groups demonstrating their AI algorithms on the stage in the AI challenge!

The highlight of the meeting will consist of keynote lectures by two fathers of advanced neuroimaging, Mike Moseley for diffusion-weighted imaging and our ASFNR Victor Haughton Awardee, Leon Axel, for perfusion imaging.

Come a day early on Saturday November 2, 2019, and choose from three optional activities to round out your weekend in San Francisco:

- An optional hands-on workshop for the BOLD fMRI image processing for presurgical planning. Attendance for the workshop is limited to the first 30 registrants and this very popular workshop is typically sold out very early on.
- Part II of the AI workshop organized by the ASFNR in collaboration with ASNR will take place Saturday, November 2nd. Applicants for the AI workshop were limited to 20 registrants and were selected through a competitive process in the spring. The first part of the workshop was held during the ASNR meeting in Boston and the final part and graduation will be held during the 13th Annual Meeting in San Francisco.
- An optional wine tour in the heart of the Napa Valley including visits to wineries and wine tastings. The number of participants for the wine tour is limited to 59 and we expect these 59 spots to book very quickly so please make sure you make your reservation early!

So join us out West! California is one grand, sweeping gesture – a long arm hugging the Pacific – and the 7-by-7-mile peninsula of San Francisco is a thumb pointed optimistically upwards. Take this as a hint to look up: you'll notice San Francisco's colorful Victorian rooflines, wind-sculpted treetops and fog tumbling over the Golden Gate Bridge. Cable cars provide easy access to Russian and Nob Hills, and splendid panoramas reward the hike up to Coit Tower. The Financial District's Transamerica Pyramid is its most distinctive skyscraper. In the Bay sits Alcatraz Island, site of the notorious former prison. San Francisco International Airport is located a short 14 miles south of San Francisco, and has direct flights from any large majority of airports across the country and internationally.

I look forward to welcoming all of you in November to San Francisco for this outstanding event!  
Warm regards,



**Max Wintermark, MD**  
President and Program Chair  
<https://www.asfnr.org/annual-meeting>





### Program Committee:

Max Wintermark  
*President and Program Chair*

Jason Allen  
Peter Chang  
Jason Druzgal  
Risto Filippi  
Jeremy Heit  
Joseph Helpert  
Michael Hoch  
Mai-Lan Ho  
Kevin Hsu

Michael Iv  
Yvonne Lui  
David Mirsky  
David Mikulis  
Sugoto Mukherjee  
Kambiz Neal  
Cyrus Raji  
Prashant Raghavan  
Haris Sair  
Lubdh Shah  
Leo Sugrue  
Jody Tanabe  
Eric Tranvinh

Achala Vagal  
Javier Villanueva-Meyer  
Shannon Walters  
Chris Whitlow  
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Kirk Welker  
Kei Yamada  
Toshio Yamaguchi  
Jean-Paul Yu  
Greg Zaharchuk  
Michael Zeineh

### Website And Social Media Committee:

Kevin Hsu, Chair  
Jennifer McCarty  
Vivek Yedavalli

### Cadmium Task Force

Jody Tanabe, Co-Chair  
Kevin Hsu, Co-Chair  
Levi Chazen  
Ed Quigley  
Lubdh Shah

### Japan Presents

Kei Yamada, Co-Chair  
Toshio Yamaguchi, Co-Chair

### Target Audience

This CME activity is intended to educate anyone interested in functional neuroimaging including neuroradiologists, neurologists, neurosurgeons, neuropsychiatrists, cognitive neuroscientist and psychologists, brain mapping scientists, physicists, residents, fellows, doctoral and postdoctoral students, engineers, and radiology technologists.

### Scientific Sponsor

Educational Symposia

### Educational Objectives

Attendees should, at the completion of this meeting, be able to:

- Understand the physics, clinical application, and limitations of the following imaging techniques: diffusion-weighted imaging, diffusion tensor imaging, MRI and CT contrast perfusion imaging, arterial spin labeling, active task and resting state BOLD fMRI, dual-energy CT, ultrahigh field MRI, MR-guided focused ultrasound and magnetic particle imaging
- Apply advanced diagnostic functional imaging techniques in a variety of disease processes including epilepsy, brain tumors, stroke and cerebrovascular disease, traumatic brain injury, neuropsychiatric disease, brain development and chronic neurodegeneration, head and neck disease, and spine conditions.
- Describe the current and future impact of artificial intelligence on the practice of neuroradiology.
- Use advanced functional imaging techniques for the benefit of pediatric patients.

*No special educational preparation is required for this CME activity.*

### Accreditation

**Physicians:** This activity has been planned and implemented in accordance with the Essential Areas and policies of the Accreditation Council for Continuing Medical Education through the joint providership of Educational Symposia and the American Society of Functional Neuroradiology. Educational Symposia is accredited by the ACCME to provide continuing medical education for physicians.

Educational Symposia designates this live activity for a maximum of 23.75 *AMA PRA Category 1 Credit(s)*<sup>™</sup>. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

**Technologists:** This program has been submitted to the ASRT. The number of A CE credits will be available approximately 30 days prior to the meeting. Please visit <http://asfmr.edusymp.com> or call (813) 806-1000 regarding the availability of Category A CE credit.

### Registration Information

Payment of the registration fee includes all meeting materials, including a color e-syllabus (printed color syllabus is available for \$95), welcome reception, daily continental breakfasts, and refreshment breaks.

Cancellations must be received in writing by sending an e-mail to [cancel@edusymp.com](mailto:cancel@edusymp.com). There is a \$75 processing fee applied to all cancellations. Cancellations made in writing prior to **October 3, 2019** will be issued a refund for the amount of tuition paid less the \$75 processing fee. No refunds will be made on or after **October 3, 2019**.

## Japan Presents



### It is ASFNR's privilege to welcome this year a distinguished representation of our Japanese neuroradiologists colleagues!

Our gratitude goes to Dr. Kei Yamada and Dr. Toshio Yamaguchi who helped set up a wonderful session featuring the latest Japanese advances in terms of advanced neuroimaging. In addition, Japanese speakers and moderators will be involved in the general sessions. Our overall goal is to reinforce the already strong ties existing between us and to foster networking and collaborations that will contribute to move our field forward for the generations to come!

#### AI Challenge (Unaccredited Session)

**At the 2019 Meeting in San Francisco, ASFNR will be hosting an AI challenge.**

ASFNR will make available a unique, carefully curated, gold-standard, test dataset of non-contrast head CTs:

- >1,200 deidentified studies
- From 5 international contributing institutions
- Encompassing a broad variety of clinically relevant pathology
- Consensus labeled by multiple independent neuroradiologists
- Download available free to academic groups and gold-level sponsors for ASFNR meeting

**Details of the ASFNR AI Challenge are available at:**

<https://www.asfnr.org/asfnr-ai-challenge/>

- There will be several challenge categories in which to compete
- Winners will be invited to present their cutting-edge work at the 2019 Annual Meeting in San Francisco

#### AI Workshop (Unaccredited Session)



**ASFNR and ASNR are partnering to offer an AI education program to train neuroradiologists and make them effective leaders and collaborators in AI projects focusing on neuroimaging.**

**The goals of this education program are to:**

1. Serve as a hands-on introductory workshop to AI and deep learning in neuroradiology
2. Allow attendees to understand and critically evaluate literature in AI and neuroradiology
3. Allow attendees to set up and conduct a basic research project using AI.

This education program includes two workshops, including one that will be held on November 2nd at the ASFNR 2019 meeting. Applicants are selected on a competitive basis every year. All the available spots have been awarded for this year. If you are interested in participating in 2020, please be on the look-out for the call for application later this year!

**You can find more information at:**

<https://www.asnr.org/research/asnr-study-groups/artificial-intelligence/asnr-asfnr-ai-workshop/>

## Sonoma Valley Wine Tour

**BOOK BY SEPTEMBER 30<sup>TH</sup>** to reserve your spot.  
Space is limited to 59 participants.

**\$149 Per Person**

### About The Sonoma Valley Wine Tour

Get to know your ASFNR colleagues and friends outside of the meeting room on Saturday, November 2, 2019, for a wine tour in the heart of the Sonoma Valley. Known as the birthplace of wine in California, the lush Sonoma Valley lies nestled between the Mayacamas Mountains and Sonoma Mountains. Sonoma Valley is known for its breathtaking views, landscapes, and microclimates, from flat meadows and valleys to rolling hills. Abundance is the norm here, offering visitors a delightful mix of beautiful vistas, wine tasting, farm-fresh cuisine, California history, art, shopping, and outdoor adventures.

This experience has been customized for our group, so the number of participants for the wine tour is limited to 59. We expect these 59 spots to book very quickly so please make your reservation today!



### Visit the Selected Wineries During this Enjoyable Tour:

- Larson Family Winery • <http://www.larsonfamilywinery.com>
- Cline Cellars • <https://clinecellars.com>

### The Wine Tour Includes the Following:

- Pickup 9:00 AM at the Hilton San Francisco Financial District, return at 5:30 PM
- An experienced and fun wine country tour guide and driver
- Stop for Picnic lunch at the Larson Family Winery
- Wine Tastings at both wineries
- Complimentary water

# Optional BOLD Functional MRI Hands-On Workshop • November 2, 2019

## About This Workshop

This workshop will provide a didactic review of clinical fMRI and a practical step-by-step post-processing and data presentation of BOLD fMRI of both task based language and sensory-motor cortex and resting state studies using MATLAB with SPM12 and CONN toolbox software.

## Target Audience

This CME activity is intended to educate neuroradiologists, neuroradiology fellows, cognitive neuroscientists and MR technologists. The workshop is intended for those with beginner level fMRI experience.

## Educational Objectives

Attendees should, at the completion of this workshop, be able to perform the following:

### Preprocessing of BOLD fMRI Data

- Realignment/Coregistration
- Spatial Normalization
- Smoothing

### Single Subject Analysis

- Model Specification
- Model Estimation
- Visualization of the BOLD fMRI Data

### Resting State fMRI

- Preprocessing of Resting state data
- Post processing strategies

*No special educational preparation is required for this CME activity.*

## Accreditation

**Physicians:** This activity has been planned and implemented in accordance with the Essential Areas and policies of the Accreditation Council for Continuing Medical Education (ACCME) through the joint providership of Educational Symposia and the American Society of Functional Neuroradiology. Educational Symposia is accredited by the ACCME to provide continuing medical education for physicians.

Educational Symposia designates this live activity for a maximum of 7.75 *AMA PRA Category 1 Credit(s)*<sup>™</sup>. Physicians should claim only the credit commensurate with the extent of their participation in the activity.

**Technologists:** This program has been submitted to the ASRT. The number of A CE credits will be available approximately 30 days prior to the meeting. Please visit <http://asfnr.edusymp.com> or call (813) 806-1000 regarding the availability of Category A CE credit.

## Hardware/Software Requirements

Registrants are required to bring to the workshop their own laptop with a minimum 2G of RAM and 10G of hard disk space. The machines should have preloaded SPM12 and MATLAB software prior to the workshop. DICOM BOLD fMRI practice data sets will be available at the workshop. All registrants will be given instructions on downloading SPM12 and the 15-day free MATLAB license prior to the workshop.

## Program Schedule

### Saturday November 2, 2019

#### 7:30 – 8:25 AM Registration

#### ESSENTIALS OF FUNCTIONAL IMAGING

- 8:25 – 8:30 Welcome  
*Scott H. Faro, M.D.*
- 8:30 – 9:15 Functional MRI: Basic Principles  
*Feroze B. Mohamed, Ph.D.*
- 9:15 – 9:45 Introduction to General Linear Model for Task Based BOLD fMRI Analysis  
*Feroze B. Mohamed, Ph.D.*
- 9:45 – 10:00 Presenting BOLD fMRI Data-Statistical Processing Strategies  
*Devon Middleton, Ph.D.*
- 10:00 – 10:15 Coffee Break**
- 10:15 – 11:00 Clinical Overview of Motor and Language BOLD fMRI Activation, Paradigms and Interpretation  
*Scott H. Faro, M.D.*
- 11:00 – 11:30 Clinical case review of BOLD fMRI  
*Kiran S. Talekar, M.D., MBBS*
- 11:30 – 11:45 Review of Neurovascular Uncoupling (NVU) in BOLD fMRI  
*Jay J. Pillai, M.D.*

#### 11:45 – 12:00 PM Pick up Boxed Lunch

#### LANGUAGE DATA PROCESSING

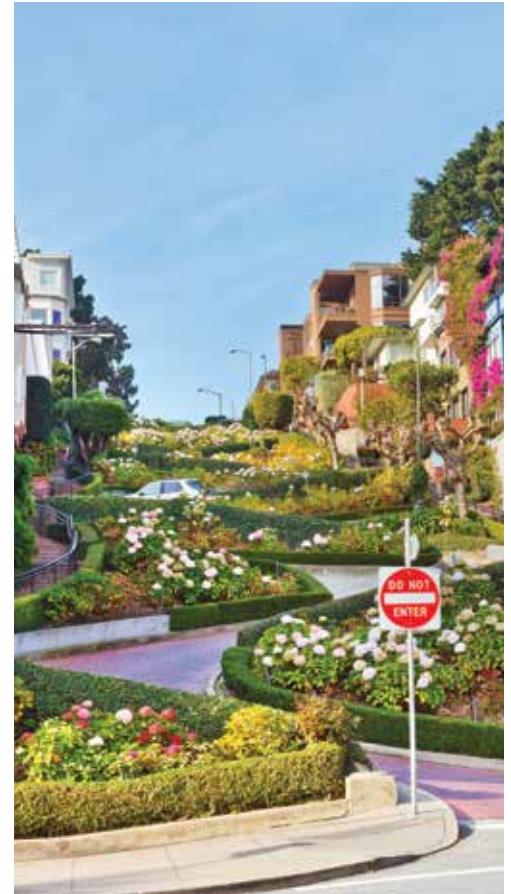
- 12:00 – 2:00 PM Practical Exercises on Language Data Processing and Review  
*Devon Middleton, Ph.D.,  
Arichena R. Manmatharayan,  
Mahdi Alizadeh, Ph.D.,  
Anup K. Bhattacharya, M.D.,  
Joshua Fisher, B.S.,  
Haris I. Sair, M.D.,  
Feroze B. Mohamed, Ph.D.,  
Shiva Shahrampour, M.S.,*

#### 2:00 – 2:15 Coffee Break

#### RESTING STATE FMRI

- 2:15 – 2:45 Introduction to Resting state fMRI  
*Haris I. Sair, M.D.*
- 2:45 – 4:45 Practical Exercise on Resting State Analysis  
*Haris I. Sair, M.D.,  
Devon Middleton, Ph.D.,  
Chris Conklin, Ph.D.,  
Mahdi Alizadeh, Ph.D.,  
Anup K. Bhattacharya, M.D.,  
Joshua Fisher, B.S.,  
Feroze B. Mohamed, Ph.D.,  
Shiva Shahrampour, M.S.,*
- 4:45 – 5:00 Review SPM Processing and Resting State fMRI with Question and Answer Session  
*Faculty*

#### 5:00 Workshop Concludes





# Program Schedule

## Sunday, November 3, 2019

**6:30 AM** **Registration, Continental Breakfast and Visit Technical Exhibits**

### ORAL PRESENTATIONS

*Moderators: Gaurang V. Shah, M.D., FACP, David Joyner, M.D., Michael U. Antonucci, M.D.*

7:00 – 8:00 Oral Presentations

**8:00 – 8:05** **Welcome and Opening Remarks**

*Max Wintermark, M.D.*

### DEMENTIA AND NEURODEGENERATIVE DISORDERS

*Moderators: Mohit Agarwal, M.D., Shingo Kakeda, M.D.*

8:05 – 8:25 Advanced Neuroimaging for Prevention of Brain Aging and Cognitive Decline  
*Cyrus Raji, M.D.*

8:25 – 8:45 Imaging Inflammation with Diffusion MR and Tau PET Imaging  
*Tammie Benzinger, M.D., Ph.D.*

8:45 – 9:05 The Role of PET-MR Imaging in Dementia Management  
*Gloria Chiang, M.D.*

9:05 – 9:25 Neuroimaging Biomarkers for Dementia Therapeutics  
*Ana Franceschi, M.D.*

9:25 – 9:30 Panel Discussion

**9:30 – 10:00** **Coffee with former AJNR Senior Editor ♦**

*Jody Tanabe, M.D.*

### DTI, DKI AND DSI

*Moderators: Christopher "Risto" G. Filippi, M.D., Joseph A. Helpert, Ph.D., Akira Yogi, M.D., Ph.D.*

10:00 – 10:15 The Alphabet Soup of Diffusion Neuroimaging  
*Aaron S. Field, M.D., Ph.D.*

10:15 – 10:30 Connectomics Using DTI  
*Mykol Larvie, M.D., Ph.D.*

10:30 – 10:45 Advanced DTI for the Clinic  
*Jennifer A. McNab, Ph.D.*

10:45 – 11:00 DTI Case Presentation  
*Jason W. Allen, M.D., Ph.D.*

### TBI AND CONCUSSION IMAGING

*Moderators: Pratik Mukherjee, M.D., Ph.D., Chris Whitlow, M.D., Ph.D., MHA, Joseph A. Maldjian, M.D.*

11:00 – 11:20 Understanding the Effects of TBI on Brain Structure Using Advanced Diffusion Imaging  
*Sumit N. Niogi, M.D., Ph.D.*

11:20 – 11:40 Imaging of Pediatric Brain Injury  
*Kei Yamada, M.D., Ph.D., FJCR*

11:40 – 12:00 PM New Directions for Advanced Functional Imaging: Magnetoencephalography as a Novel Biomarker of TBI  
*Roland R. Lee, M.D., FACP*

12:00 – 12:15 Panel Discussion

**12:30 – 1:15** **How-To Lunch Sponsored by Nines AI ♦**

AI in Neuroimaging:  
Nines' Perspective to Empower Neurorads  
*Kambiz Nael, M.D.*

## Sunday, November 3, 2019 (continued)

### AWARD LECTURES

*Moderator: Max Wintermark, M.D., Howard A. Rowley, M.D.*

1:30 – 2:00 Victor M. Haughton  
Honorary Lecture -  
Inventing Perfusion Imaging  
*Leon Axel, Ph.D., M.D.*

2:00 – 2:30 Keynote Lecture -  
Inventing Diffusion Imaging  
*Michael E. Moseley, Ph.D.*

### EPILEPSY

*Moderators: T. Jason Druzgal, M.D., Ph.D., Lily Wang, M.B.B.S., M.P.H., Jeffrey S. Anderson, M.D., Ph.D.*

2:30 – 2:45 Practical Neuroimaging for Epilepsy  
*Erik H. Middlebrooks, M.D.*

2:45 – 3:00 Advanced Neuroimaging for Epilepsy  
*Steve Stufflebeam, M.D.*

3:00 – 3:15 Future Neuroimaging for Epilepsy Including (Non-FDG PET, Sodium Imaging, Tractography)  
*Timothy M. Shepherd, M.D., Ph.D.*

3:15 – 3:30 Panel Discussion

**3:30 – 4:00** **Coffee with Past Presidents ♦ Sponsored by MR Instruments**

*Kirk M. Welker, M.D., Christopher G. Filippi, M.D., Pratik Mukherjee, M.D., Ph.D., David J. Mikulis, M.D., Meng Law, M.D., MBBS, FRACP, Daniel P. Barboriak, M.D., Joseph A. Maldjian, M.D., Scott H. Faro, M.D., Timothy P.L. Roberts, Ph.D., Jay J. Pillai, M.D., Andrei I. Holodny, M.D.*

### JAPANESE HIGHLIGHT SESSION

*Moderators: Yukunori Korogi, M.D., Ph.D., Yukio Miki, M.D., Ph.D., Yoshiyuki Watanabe, M.D., Ph.D.*

4:00 – 4:15 QSM Analysis for the Early Diagnosis of Alzheimer's Disease  
*Kohsuke Kudo, M.D., Ph.D.*

4:15 – 4:30 Advanced Diffusion Imaging for Research and Practice  
*Masaaki Hori, M.D.*

4:30 – 4:45 Visualization and Evaluation of Neuro-Fluid Dynamics  
*Toshiaki Taoka, M.D., Ph.D.*

4:45 – 5:00 Panel Discussion

### BOLD TASK-BASED FMRI, RESTING-STATE FMRI, FUNCTIONAL CONNECTIVITY

*Moderators: David F. Black, M.D., Feroze B. Mohamed, Ph.D., Behroze Adi Vachha, M.D., Ph.D.*

5:00 – 5:20 Introduction to BOLD Contrast and Image Creation  
*Ammar Chaudhry, M.D.*

5:20 – 5:40 Clinical Implementation of Active Task BOLD fMRI  
*Asim Z. Mian, M.D.*

5:40 – 6:00 Clinical Implementation of Resting State BOLD fMRI  
*Vinodh "Vince" A. Kumar, M.D.*

6:00 – 6:20 Active Task BOLD fMRI Cases  
*Kiran S. Talekar, M.D., MBBS*

6:20 – 6:30 Panel Discussion

**6:30 – 8:00** **Welcome Reception**

## Monday, November 4, 2019

**6:30 AM** **Registration, Continental Breakfast and Visit Technical Exhibits**

### ORAL PRESENTATIONS

*Moderators: Jay J. Pillai, M.D., Bhavya Shah, M.D., Girish Fatterpekar, M.B.B.S., D.N.B., M.D.*

7:00 – 8:00 Oral Presentations

**8:00 – 8:05** **Opening Remarks**

*Max Wintermark, M.D.*

### NEUROPSYCHIATRY

*Moderators: Timothy P.L. Roberts, Ph.D., Jennifer Chang, M.D., Toshinori Hirai, M.D., Ph.D.*

8:05 – 8:25 Synaptic Density in Neuropsychiatric Disease  
*Ming-Kai Chen, M.D.*

8:25 – 8:45 MR Spectroscopy in Craving with a Focus on Alcoholism  
*John D. Port, M.D., Ph.D.*

8:45 – 9:05 Advanced Neuroimaging of Addiction  
*Jody Tanabe, M.D.*

9:05 – 9:20 Imaging in Neuropsychiatry, Can We Leverage Big Data for Individual Prediction?  
*Leo Sugrue, M.D., Ph.D.*

9:20 – 9:30 Panel Discussion

**9:30 – 10:00** **Coffee Break**

**9:30 – 10:00** **ASFNR Business Meeting - Members Only ♦**

### PERFUSION IMAGING

*Moderators: Jerrold L. Boxerman, M.D., Ph.D., FACP, Rajan Jain, M.D., Carlos Leiva-Salinas, M.D., Ph.D.*

10:00 – 10:15 Perfusion CT  
*Achala Vagal, M.D., M.S.*

10:15 – 10:30 DSC/DCE MRI  
*Mark S. Shiroishi, M.D., M.S.*

10:30 – 10:45 ASL/IVIM  
*David Alsop, Ph.D.*

10:45 – 11:00 Case Presentation  
*Kambiz Nael, M.D.*

### STROKE/CVIR/ WALL IMAGING

*Moderators: David J. Mikulis, M.D., Ranliang Hu, M.D., David A. Saloner, Ph.D.*

11:00 – 11:15 MRI for Ischemic Core and Penumbral Imaging in Ischemic Stroke  
*Jeremy J. Heit, M.D., Ph.D.*

11:15 – 11:30 Vessel Wall Imaging in Cerebrovascular Disease  
*Ajay Gupta, M.D.*

11:30 – 11:45 Pediatric Cerebrovascular Reserve  
*Andrea Kassner, Ph.D.*

11:45 – 12:00 PM Collaterals in Stroke  
*Elizabeth Tong, M.D.*

12:00 – 12:15 Panel Discussion

**12:30 – 1:15** **How-To Lunch - Sponsored by Blue Earth Diagnostics, Inc. ♦**

Overview of Amino Acid PET Imaging for Primary and Secondary Brain Tumors  
*Whitney B. Pope, M.D., Ph.D.*

Monday, November 4, 2019 (continued)

**HEAD CT TRIAGE AI CHALLENGE**

*Moderators: Greg Zaharchuk, M.D., Ph.D.,  
Peter D. Chang, M.D.*

1:15 – 2:15 AI Competition ♦

**DUAL-ENERGY CT**

*Moderators: Eric Tranvinh, M.D., H. Robert Hixson, M.D.,  
Chris Potter, M.D.*

2:30 – 2:45 Dual-Energy CT Physics & Principles of Material Characterization  
*Reza Forghani, M.D., Ph.D.*

2:45 – 3:00 Dual-energy CT in Neurointervention  
*Dylan Wolman, M.D.*

3:00 – 3:15 Dual-Energy CT for Spine  
*Peter Komlosi, M.D., Ph.D.*

3:15 – 3:30 Panel Discussion

**3:30 – 4:00 Coffee with Future Presidents ♦**

*Greg Zaharchuk, M.D., Ph.D.,  
Harris I. Sair, M.D.,  
Christopher T. Whitlow, M.D., Ph.D.,  
MHA*

**3D PRINTING AND  
ADVANCED VISUALIZATION**

*Moderators: Edward P. Quigley, III, M.D., Ph.D.,  
Jalal B. Andre, M.D.*

4:00 – 4:15 Multimodality 3D Printed models in Pediatric Neuroimaging  
*Sanjay P. Prabhu, MBBS, FRCR*

4:15 – 4:30 How to Set Your Practice Up for 3D Printing  
*Shannon Walters, MS, R.T.*

4:30 – 4:45 Advanced Visualization and Extended Reality for Neuroradiology  
*David B Douglas, M.D., MPH*

4:45 – 5:00 Panel Discussion

**STUDY GROUP ♦**

5:00 – 6:30 DTI/ Perfusion Study Group  
*David F. Black, M.D.  
DJerrold L. Boxerman, M.D., Ph.D.*

5:00 – 6:30 BOLD Study Group  
*Asim Z. Mian, M.D. and  
Kirk M. Welker, M.D.*

5:00 – 6:30 ASFNR/ASNR AI Study Group  
*Greg Zaharchuk, M.D., Ph.D. and  
Peter D. Chang, M.D.*

5:00 – 6:30 Neuropsychiatric Imaging Study Group  
*Jody Tanabe, M.D.*

5:00 – 6:30 Pediatric Advanced Neuroimaging Study Group  
*Rupa Radhakrishnan, M.D., MBBS, MS  
and Avner Meoded, M.D.*

Tuesday, November 5, 2019

6:30 AM

**Registration, Continental  
Breakfast and Visit Technical  
Exhibits**

**ORAL PRESENTATIONS**

*Moderators: Joel Fritz, M.D., Seena Dehkharghani, M.D.,  
Gloria J. Guzman Perez-Carrillo, M.D., MSc*

7:00 – 8:00 Oral Presentations

8:00 – 8:05

**Opening Remarks**

*Max Wintermark, M.D.*

**BRAIN TUMORS**

*Moderators: Ramon Barajas Jr., M.D., Raymond Y.  
Huang, M.D., Koji Yamashita, M.D.*

8:05 – 8:25 Ferumoxylot-Enhanced MRI for Glioma Assessment in the Immunotherapy Era  
*Michael Iv, M.D.*

8:25 – 8:45 Radiomics of Brain Metastases  
*Javier Villanueva-Meyer, M.D.*

8:45 – 9:05 Advanced Neuroimaging of Pediatric Brain Tumors  
*Stephen F. Kralik, M.D.*

9:05 – 9:20 Application of AI in Brain Tumors  
*Rivka R. Colen, M.D.*

9:20 – 9:30 Panel Discussion

9:30 – 10:00

**Coffee Break with current  
AJNR Senior Editor for AI ♦**

*Christopher "Risto" G. Filippi, M.D.*

**AI IN NEURORADIOLOGY**

*Moderators: Ona Wu, Ph.D., Albert Montillo, Ph.D.,  
Mika Kitajima, M.D., Ph.D.*

10:00 – 10:20 Deep Learning Primer for Neuroradiologists  
*Alyssa T. Watanabe, M.D.*

10:20 – 10:40 AI Beyond Image Classification  
*Peter D. Chang, M.D.*

10:40 – 11:00 Strategies and Barriers to Clinical Implementation of AI Tools  
*Marc Kohli, M.D.*

11:00 – 11:20 AI for Functional Neuroimaging  
*Greg Zaharchuk, M.D., Ph.D.*

11:20 – 11:30 Panel Discussion

**HIGH-FIELD MRI, MPI AND MRGFUS**

*Moderators: Susie Y. Huang, MD, PhD,  
Noriko Salamon, M.D., Ph.D., Osamu Abe, M.D., Ph.D.*

11:30 – 11:45 Ultra-High Resolution Brain Imaging with 7T MRI  
*Michael Zeineh, M.D.*

11:45 – 12:00 PM MR-Guided Focused Ultrasound for Ablation  
*Toshio Yamaguchi, M.D., Ph.D.*

12:00 – 12:15 MR-Guided Focused Ultrasound for Neuromodulation  
*Raag Airan, M.D., Ph.D.*

12:15 – 12:30 Magnetic Particle Imaging  
*Steve Conolly, Ph.D.*

12:45 – 1:30

**How-To Lunch -  
Sponsored by Olea Medical ♦**

Beyond DTI for TBI;  
Using Multi-Parametric Analysis  
*Damien Galanaud, M.D., Ph.D.*

Tuesday, November 5, 2019 (continued)

**PEDIATRICS**

*Moderators: Rupa Radhakrishnan, M.D., MBBS, MS,  
Avner Meoded, M.D., Kentaro Akazawa, M.D.*

1:45 – 2:00 Advanced Fetal Imaging  
*Orit Glenn, M.D.*

2:00 – 2:15 Brain Development: Genetics to Imaging  
*Mai-Lan Ho, M.D.*

2:15 – 2:30 Artificial Intelligence in Pediatric Craniopharyngiomas  
*David M. Mirsky, M.D.*

**SPINE**

*Moderators: Wende N. Gibbs, M.D., M.A.,  
Amish H. Doshi, M.D., Jason Talbott, M.D., Ph.D.*

2:30 – 2:45 Diffusion Tensor Imaging of the Spine: Techniques and Applications  
*Mahmud Mossa-Bosha, M.D.*

2:45 – 3:00 Translation of High Intensity Focused Ultrasound in Back Pain Treatment  
*Lubdhra M. Shah, M.D.,  
Presented by  
Jeffrey S. Anderson, M.D., Ph.D.*

3:00 – 3:15 Bone Marrow Perfusion Imaging  
*Andrei I. Holodny, M.D.*

3:15 – 3:30 Panel Discussion

**HEAD AND NECK**

*Moderators: Sugoto Mukherjee, M.D., Joseph Donahue, M.D.,  
Ashley Hawk Aiken, M.D.*

3:30 – 3:45 Advanced CT Imaging in the Head and Neck  
*Ashok Srinivasan, M.D.*

3:45 – 4:00 Dynamic Contrast-Enhanced MRI of the Head and Neck – From Theory to Practice  
*Sobit H. Patel, M.D.*

4:00 – 4:15 MRI-PET in Head and Neck Cancer – Where Are We and What Lies Ahead  
*Prashant Raghavan, MBBS*

4:15 – 4:30 Panel Discussion

**4:30 – 4:35 Closing Remarks**

*Greg Zaharchuk, M.D., Ph.D.*

**4:35 End of Course**

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# BOLD Functional MRI Hands-On Workshop

## Course Directors

**Scott H. Faro, M.D. and Feroze B. Mohamed, Ph.D.**

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# Hilton San Francisco Financial District

750 Kearny Street  
San Francisco, CA 94108

Phone: (415) 433-6600



## Make Reservations

**Space is Limited – Reserve Today:** Call (800) 774-1500 and provide Group Code “ASFNR” or book online at:  
[https://www.hilton.com/en/hi/groups/personalized/S/SFOFDHF-ASFNR-20191031/index.jhtml?WT.mc\\_id=POG](https://www.hilton.com/en/hi/groups/personalized/S/SFOFDHF-ASFNR-20191031/index.jhtml?WT.mc_id=POG)

### About The Resort

The Hilton San Francisco Financial District boasts a convenient downtown location, just a few steps from premier Bay Area attractions. Whether you are experiencing the spirited nightlife of Chinatown, hopping on a ferry to Alcatraz Island, or savoring a sunny afternoon on Fisherman’s Wharf, the onsite concierge can help you find the perfect activity for your San Francisco getaway.

Your luxurious hotel room will feature a panoramic view of the bay or the skyline with a full wall of windows.

### How to Get There

Fly directly to San Francisco International Airport, located just 25 minutes from the Hilton San Francisco Financial District. Daily non-stop flights are available to San Francisco for major national and international carriers.

### Special Discounted Group Room Rate

**Standard Guestroom.....\$269/nt.**  
(single/double occupancy)

**Hotel cut-off date: October 11, 2019**  
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**Hotel Tax:** 16.45%  
**Sales Tax:** 8.5%  
**Resort Fee:** None

**DEPOSIT POLICY:**  
Hotel requires one night’s room as a deposit to be charged at time of reservation.

**CANCELLATION POLICY:**  
Reservations cancelled less than 72 hours prior to the arrival date are subject to a fee equal to the cost of one night’s stay plus tax. Check in time is: 3:00 PM; check out time is: 12:00 PM.

# Meeting Registration Form:



13<sup>th</sup> Annual Meeting of the

American Society of

# Functional Neuroradiology

**November 3 – 5, 2019** • Hilton San Francisco Financial District • San Francisco, CA

**Optional BOLD Functional MRI Hands-On Workshop • November 2, 2019**

Workshop attendance is limited to the first 30 Registrants

**Optional Sonoma Valley Wine Tour • November 2, 2019** (Limited to 59 participants)

ASFNR19

REGISTRATION FEES	ASFNR 13 <sup>TH</sup> ANNUAL MEETING Sun. - Tue.	BOLD fMRI Workshop	Sonoma Valley Wine Tour
<input type="checkbox"/> ASFNR Member	<input type="checkbox"/> \$395	<input type="checkbox"/> \$295	<input type="checkbox"/> \$149
<input type="checkbox"/> Non-Member	<input type="checkbox"/> \$495	<input type="checkbox"/> \$295	<input type="checkbox"/> \$149
<input type="checkbox"/> Trainee* (Fellow*, Resident*, Undergrad*, Post Doc*), Full-Time Military*, Technologist, Retired Physician	<input type="checkbox"/> \$195	<input type="checkbox"/> \$295	<input type="checkbox"/> \$149

**Includes Electronic Color Syllabus**

**Subtotal \$** \_\_\_\_\_

**I am: (please check one)** \*Must enclose letter from Director verifying status.

☐ ASFNR Member ☐ Non-Member ☐ Fellow\* ☐ Resident\* ☐ Trainee (Undergrad Post Doc)\* ☐ Full-Time Military\* ☐ Technologist ☐ Retired Physician

Name \_\_\_\_\_ Degree ☐ M.D. ☐ D.O. ☐ Ph.D. ☐ P.A. ☐ R.T. ☐ Other

Company / Institution \_\_\_\_\_ Specialty \_\_\_\_\_

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Phone \_\_\_\_\_ Email **(REQUIRED FOR ELECTRONIC SYLLABUS)** \_\_\_\_\_

Card Number / Card Type: ☐ Master Card ☐ Visa ☐ American Express ☐ Discover \_\_\_\_\_ Exp. Date \_\_\_\_\_ Security Code \_\_\_\_\_

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## 4 Easy Ways To Register

## We Accept



**INTERNET**

[www.asfnr.org/annual-meeting](http://www.asfnr.org/annual-meeting)  
or [ASFNR.edusymp.com](http://ASFNR.edusymp.com)

### MAIL

Check payable to ASFNR:  
ASFNR  
c/o Educational Symposia  
5620 West Sligh Avenue  
Tampa, Florida  
33634-4490

### FAX

(813) 806-1001

### PHONE

(813) 806-1000

**Disclaimer:** Educational Symposia (ESI) and ASFNR as planners and presenters of this meeting, and Professional Travel as the official travel agency for these meetings, claim no liability for the acts of any suppliers or the safety of any attendees while in transit to, from, or during this event or any optional activities. The total amount of liability, if any, for the meeting organizers is limited to a refund of the registration fee, and Professional Travel's responsibility is limited to that of an agent.



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**CANCELLATIONS:** Request for refund of registration fees, less a \$75 processing fee, will be made to those providing written notification of cancellation by **October 3, 2019**. After that date, there will be no refunds given for cancellations. Please email notice of cancellation to: [cancel@edusymp.com](mailto:cancel@edusymp.com) or fax to (813) 806-1001.

# American Society of Functional Neuroradiology

## Membership Application (Please type or print legibly)

### Benefits of ASFNR Membership

Members support the scientific and educational objectives of the ASFNR, and also receive the following benefits:

- Online access to downloadable Paradigms.
- Access to the ASFNR Membership Directory.
- Committee Service (Member and Associate).
- Online access to the Annual Meeting Abstracts.
- Option to join up to four ASFNR Study Groups.
- Certificate of Membership (*Member* and *Associate* only).
- Download digital versions of the Annual Meeting Syllabi.
- Reduced registration fee to attend the ASFNR Annual Meeting.
- Subscription to the *American Journal of Neuroradiology* at a reduced rate.

### Membership is Available in the Following Categories

- **Member:** Shall be a radiologist, neuroradiologist, physicist, or scientist who practices or has a special interest in functional neuroradiology.
- **Associate:** Shall be a physician, scientist, or radiologic technologist (M.D., D.O., Ph.D., R.T.) with a special interest in functional neuroradiology but who does not fulfill the criteria for *Member* status.
- **Trainee:** Shall be medical students, graduate students, undergraduate students, residents or fellows. A postdoctoral fellow will be considered a trainee member if they are within four years of their doctoral degree.

You can apply for membership online at <https://secure.asnr.org/membership-application/asfnr-member>

### Membership Application

Membership category applied for: ☐ **Member**      ☐ **Associate**      ☐ **Trainee**

1. Name \_\_\_\_\_  
First / Middle Initial / Last Name / Degree

2. List *both* home and office addresses:

**Home**

Address \_\_\_\_\_

City/State \_\_\_\_\_

Zip \_\_\_\_\_

Phone: (\_\_\_\_) \_\_\_\_\_

E-mail address \_\_\_\_\_

(E-mail address is *required* – please print legibly)

**Office**

Institution \_\_\_\_\_

Department \_\_\_\_\_

Address \_\_\_\_\_

City/State \_\_\_\_\_

Zip \_\_\_\_\_

Which address is preferred? ☐ Home    ☐ Office

3. **Certification:** Board (1) \_\_\_\_\_ Date \_\_\_\_\_  
Board (2) \_\_\_\_\_ Date \_\_\_\_\_  
Subspecialty Certification (formerly CAQ) \_\_\_\_\_ Date \_\_\_\_\_

4. **Medical (or Graduate) Education** (include location, dates, and degree):

5. **Post-Graduate Education** (Internship, Residency, Fellowships) (including location and dates):

Internship \_\_\_\_\_ Dates \_\_\_\_\_

Residency \_\_\_\_\_ Dates \_\_\_\_\_

Fellowships \_\_\_\_\_ Dates \_\_\_\_\_



6. **Practice Setting:** ☐ Academic ☐ Private ☐ Other \_\_\_\_\_

7. **Indicate all the societies of which you are a member with an "X":**

\_\_\_\_ ASNR \_\_\_\_ ASHNR \_\_\_\_ ASPNR \_\_\_\_ ASSR \_\_\_\_ ENRS \_\_\_\_ SENRS \_\_\_\_ WNRS  
\_\_\_\_ ISMRM \_\_\_\_ OHBM

8. **Sponsorship: applicants who do NOT belong to ASNR, ASHNR, ASPNR, ASSR, ENRS, SENRS or WNRS require one (1) sponsor.**

Sponsors must be members in good standing, holding ASFNR *Member* status.. All sponsors must be familiar with the reputation and qualifications of the candidate and his/her involvement or interest in functional neuroradiology. Please email [max.wintermark@gmail.com](mailto:max.wintermark@gmail.com) if you need suggestions for sponsors.

Sponsor's Name \_\_\_\_\_

Institution \_\_\_\_\_

Phone: (     ) \_\_\_\_\_ E-mail \_\_\_\_\_

9. **I agree to abide by the ASFNR Constitution and any revisions thereof:**

\_\_\_\_\_  
Applicant's Signature

\_\_\_\_\_  
Date

IMPORTANT		
<b>Applicants must provide:</b> 1. Application (completed in its entirety) 2. Current Curriculum Vitae		
<b>ASFNR</b>		
<b>Category</b>	<b>Annual Dues</b>	
<b>Member</b>	\$125 + \$25 application fee	\$150
<b>Associate</b>	\$75 + \$25 application fee	\$100
<b>Student</b>	\$0	\$0
Study Groups are an additional \$10 each – add \$10 for each group subscription, and indicate the group: ____ <b>BOLD fMRI</b> ____ <b>Diffusion/Perfusion Imaging</b> ____ <b>AI</b> ____ <b>Neuropsychiatric MR</b> ____ <b>Pediatric Advanced Neuroimaging</b>		



**U.S. applicants may pay application fee online or by using this paper application+check (made payable to ASFNR). Non-U.S. applicants must apply and pay by credit card online.**

If you wish to attend the ASFNR Annual Meeting and receive a member discount, your completed application must be received prior to the respective meeting. Log onto [www.asfnr.org](http://www.asfnr.org) for more information on upcoming ASFNR Annual Meetings.

**RETURN (with all documentation, if required) TO:**

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**Attention: Membership Dept.**  
**800 Enterprise Dr., Suite 205**  
**Oak Brook, IL 60523-4216**  
**PH: 630-574-0220 ext. 222**  
**E-mail: [lkennelly@asnr.org](mailto:lkennelly@asnr.org)**

Revised 05/28