



Greg Zaharchuk

Professor of Radiology (Neuroimaging and Neurointervention)

 Curriculum Vitae available Online

CLINICAL OFFICE (PRIMARY)

- **Neuroradiology**

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Stanford, CA 94305

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ACADEMIC CONTACT INFORMATION

- **Alternate Contact**

Susan Mir - Administrative Associate

Email susanmir@stanford.edu

Tel 650-736-6172

Bio

CLINICAL FOCUS

- Diagnostic Radiology

ACADEMIC APPOINTMENTS

- Professor, Radiology
- Member, Bio-X
- Faculty Affiliate, Institute for Human-Centered Artificial Intelligence (HAI)
- Member, Wu Tsai Neurosciences Institute

HONORS AND AWARDS

- Fellow, American Institute for Medical and Biological Engineering (AIMBE) (2020)
- Distinguished Investigator Award, The Academy for Radiology & Biomedical Imaging Research (2016)
- Scholar Award, Neuroradiology Education and Research Foundation (2009)
- Executive Council Award, American Roentgen Ray Society (2006)
- Resident/Fellow Research Award, Radiological Society of North America (2002)
- Young Investigator Award in Stroke, American Heart Association (1998)
- Young Investigator Finalist, International Society of Magnetic Resonance in Medicine (1998)
- Phi Beta Kappa, Stanford University (1989)
- Valedictorian, Materials Science and Engineering, Stanford University (1989)
- Tau Beta Pi, Stanford University (1987)

BOARDS, ADVISORY COMMITTEES, PROFESSIONAL ORGANIZATIONS

- President-Elect, American Society of Functional Neuroradiology (2020 - present)
- Deputy Editor, Journal of Magnetic Resonance Imaging (2018 - present)

- Editorial Board, Radiology (2016 - present)
- Scientific Program Committee, Neuroradiology/Head & Neck Subcommittee, Radiological Society of North America (RSNA) (2012 - present)
- Annual Meeting Program Committee, International Society of Magnetic Resonance in Medicine (2012 - 2015)
- Special Consultant to the Editor - Physics, American Journal of Neuroradiology (2011 - present)

PROFESSIONAL EDUCATION

- Board Certification: Neuroradiology, American Board of Radiology (2007)
- Board Certification: Diagnostic Radiology, American Board of Radiology (2005)
- Fellowship: University of California San Francisco (2006) CA
- Residency: University of California San Francisco (2005) CA
- Internship: Robert Wood Johnson University Hospital (2001) NJ
- MD, Harvard Medical School , Medicine (2000)
- PhD, Harvard University / Massachusetts Institute of Technology , Applied Physics (HST Program) (1999)
- BS & BA, Stanford , Materials Science & Engineering/German Studies (1990)

PATENTS

- Greg Zaharchuk, Enhao Gong, John Pauly. "United States Patent submitted Improving Quality of Medical Images Using Multi-Contrast and Deep Learning", Leland Stanford Junior University, Mar 6, 2017
- Greg Zaharchuk, Roland Bammer. "United States Patent 8,929,972 Arterial Spin Labeling MRI-based Correction Factor for Improving Quantitative Accuracy of Blood Flow and Volume Images", Leland Stanford Junior University,, Jan 6, 2015
- Greg Zaharchuk, Jean Brittain. "United States Patent 7,064,545 Method and Apparatus of Background Suppression in MR imaging using Spin Locking", General Electric Company, The Regents Of The University Of California, Jun 20, 2006
- Kookrin Char, Stephen M. Garrison, Nathan Newman, Greg Zaharchuk. "United States Patent 5,157,466 Grain Boundary Junctions in High Temperature Superconductor Films", Conductus, Inc., Oct 20, 1992
- Reed Busse, John Pauly, Greg Zaharchuk. "United States Patent 7,276,904 Method for Generating T1-weighted Magnetic Resonance Images and Quantitative T1 Maps", Leland Stanford Junior University, Oct 2, 0007

LINKS

- Center for Advanced Functional Neuroimaging: <http://med.stanford.edu/cafn.html>

Research & Scholarship

CURRENT RESEARCH AND SCHOLARLY INTERESTS

Improving medical image quality using deep learning artificial intelligence

Imaging of cerebral hemodynamics with MRI and CT

Noninvasive oxygenation measurement with MRI

Clinical imaging of cerebrovascular disease

Imaging of cervical artery dissection

MR/PET in Neuroradiology

Resting-state fMRI for perfusion imaging and stroke

CLINICAL TRIALS

- Computed Tomography Perfusion (CTP) to Predict Response to Recanalization in Ischemic Stroke Project (CRISP), Not Recruiting
- Imaging Collaterals in Acute Stroke (iCAS), Not Recruiting
- Quantifying Collateral Perfusion in Cerebrovascular Disease-Moyamoya Disease and Stroke Patients, Not Recruiting

Teaching

COURSES

2023-24

- Why College? Your Education and the Good Life: COLLEGE 101 (Aut)

2022-23

- Why College? Your Education and the Good Life: COLLEGE 101 (Aut)

2021-22

- Why College? Your Education and the Good Life: COLLEGE 101 (Aut)

STANFORD ADVISEES

Postdoctoral Faculty Sponsor

Donghoon Kim, Yongkai Liu

Doctoral Dissertation Advisor (AC)

Ashwin Kumar, JIAHONG OUYANG

Publications

PUBLICATIONS

- **Artificial Intelligence Applications in Stroke.** *Stroke*
Mouridsen, K., Thurner, P., Zaharchuk, G.
2020: STROKEAHA119027479
- **Predicting PET Cerebrovascular Reserve with Deep Learning by Using Baseline MRI: A Pilot Investigation of a Drug-Free Brain Stress Test.** *Radiology*
Chen, D. Y., Ishii, Y., Fan, A. P., Guo, J., Zhao, M. Y., Steinberg, G. K., Zaharchuk, G.
2020: 192793
- **Use of Deep Learning to Predict Final Ischemic Stroke Lesions From Initial Magnetic Resonance Imaging.** *JAMA network open*
Yu, Y. n., Xie, Y. n., Thamm, T. n., Gong, E. n., Ouyang, J. n., Huang, C. n., Christensen, S. n., Marks, M. P., Lansberg, M. G., Albers, G. W., Zaharchuk, G. n.
2020; 3 (3): e200772
- **Ultra-Low-Dose 18F-Florbetaben Amyloid PET Imaging Using Deep Learning with Multi-Contrast MRI Inputs.** *Radiology*
Chen, K. T., Gong, E., de Carvalho Macruz, F. B., Xu, J., Boumris, A., Khalighi, M., Poston, K. L., Sha, S. J., Greicius, M. D., Mormino, E., Pauly, J. M., Srinivas, S., Zaharchuk, et al
2018: 180940
- **Thrombectomy for Stroke at 6 to 16 Hours with Selection by Perfusion Imaging.** *The New England journal of medicine*
Albers, G. W., Marks, M. P., Kemp, S. n., Christensen, S. n., Tsai, J. P., Ortega-Gutierrez, S. n., McTaggart, R. A., Torbey, M. T., Kim-Tenser, M. n., Leslie-Mazwi, T. n., Sarraj, A. n., Kasner, S. E., Ansari, et al
2018; 378 (8): 708–18
- **Arterial Spin Labeling Perfusion of the Brain: Emerging Clinical Applications** *RADIOLOGY*
Haller, S., Zaharchuk, G., Thomas, D. L., Lovblad, K., Barkhof, F., Golay, X.
2016; 281 (2): 337-356
- **MR vascular fingerprinting: A new approach to compute cerebral blood volume, mean vessel radius, and oxygenation maps in the human brain.** *NeuroImage*
Christen, T., Pannetier, N. A., Ni, W. W., Qiu, D., Moseley, M. E., Schuff, N., Zaharchuk, G.
2014; 89: 262-270
- **Measuring brain oxygenation in humans using a multiparametric quantitative blood oxygenation level dependent MRI approach** *MAGNETIC RESONANCE IN MEDICINE*

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- Christen, T., Schmiedeskamp, H., Straka, M., Bammer, R., Zaharchuk, G.
2012; 68 (3): 905-911
- **Comparison of Arterial Spin Labeling and Bolus Perfusion-Weighted Imaging for Detecting Mismatch in Acute Stroke** *STROKE*
Zaharchuk, G., El Mogy, I. S., Fischbein, N. J., Albers, G. W.
2012; 43 (7): 1843-1848
 - **Identification of Venous Signal on Arterial Spin Labeling Improves Diagnosis of Dural Arteriovenous Fistulas and Small Arteriovenous Malformations** *AMERICAN JOURNAL OF NEURORADIOLOGY*
Le, T. T., Fischbein, N. J., Andre, J. B., Wijman, C., Rosenberg, J., Zaharchuk, G.
2012; 33 (1): 61-68
 - **Arterial Spin Label Imaging of Acute Ischemic Stroke and Transient Ischemic Attack** *NEUROIMAGING CLINICS OF NORTH AMERICA*
Zaharchuk, G.
2011; 21 (2): 285-?
 - **COVID-19-induced anosmia associated with olfactory bulb atrophy.** *Neuroradiology*
Chiu, A., Fischbein, N., Wintermark, M., Zaharchuk, G., Yun, P. T., Zeineh, M.
2020
 - **Simultaneous FDG-PET/MRI detects hippocampal subfield metabolic differences in AD/MCI.** *Scientific reports*
Carlson, M. L., DiGiacomo, P. S., Fan, A. P., Goubran, M., Khalighi, M. M., Chao, S. Z., Vasanawala, M., Wintermark, M., Mormino, E., Zaharchuk, G., James, M. L., Zeineh, M. M.
2020; 10 (1): 12064
 - **Collateral status contributes to differences between observed and predicted 24-h infarct volumes in DEFUSE 3.** *Journal of cerebral blood flow and metabolism : official journal of the International Society of Cerebral Blood Flow and Metabolism*
Rao, V. L., Mlynash, M., Christensen, S., Yennu, A., Kemp, S., Zaharchuk, G., Heit, J. J., Marks, M. P., Lansberg, M. G., Albers, G. W.
2020: 271678X20918816
 - **Deep Flow-Net for EPI Distortion Estimation.** *NeuroImage*
Zahneisen, B., Baeumler, K., Zaharchuk, G., Fleischmann, D., Zeineh, M.
2020: 116886
 - **Elevated brain oxygen extraction fraction measured by MRI susceptibility relates to perfusion status in acute ischemic stroke** *JOURNAL OF CEREBRAL BLOOD FLOW AND METABOLISM*
Fan, A. P., Khalil, A. A., Fiebach, J. B., Zaharchuk, G., Villringer, A., Villringer, K., Gauthier, C. J.
2020; 40 (3): 539-51
 - **Arterial-spin labeling MRI identifies residual cerebral arteriovenous malformation following stereotactic radiosurgery treatment** *JOURNAL OF NEURORADIOLOGY*
Heit, J. J., Thakur, N. H., Iv, M., Fischbein, N. J., Wintermark, M., Dodd, R. L., Steinberg, G. K., Chang, S. D., Kapadia, K. B., Zaharchuk, G.
2020; 47 (1): 13-19
 - **Quantification of brain oxygen extraction and metabolism with [15O]-gas PET: A technical review in the era of PET/MRI.** *NeuroImage*
Fan, A. P., An, H. n., Moradi, F. n., Rosenberg, J. n., Ishii, Y. n., Nariai, T. n., Okazawa, H. n., Zaharchuk, G. n.
2020: 117136
 - **Generalization of deep learning models for ultra-low-count amyloid PET/MRI using transfer learning.** *European journal of nuclear medicine and molecular imaging*
Chen, K. T., Schürer, M. n., Ouyang, J. n., Koran, M. E., Davidzon, G. n., Mormino, E. n., Tiepolt, S. n., Hoffmann, K. T., Sabri, O. n., Zaharchuk, G. n., Barthel, H. n.
2020
 - **Fellow in a Box: Combining AI and Domain Knowledge with Bayesian Networks for Differential Diagnosis in Neuroimaging.** *Radiology*
Zaharchuk, G. n.
2020: 200819
 - **Deep Learning Enables Automatic Detection and Segmentation of Brain Metastases on Multisequence MRI** *JOURNAL OF MAGNETIC RESONANCE IMAGING*
Grovik, E., Yi, D., Iv, M., Tong, E., Rubin, D., Zaharchuk, G.
-

2020; 51 (1): 175–82

- **Simultaneous Phase-Contrast MRI and PET for Noninvasive Quantification of Cerebral Blood Flow and Reactivity in Healthy Subjects and Patients With Cerebrovascular Disease** *JOURNAL OF MAGNETIC RESONANCE IMAGING*
Ishii, Y., Thamm, T., Guo, J., Khalighi, M., Wardak, M., Holley, D., Gandhi, H., Park, J., Shen, B., Steinberg, G. K., Chin, F. T., Zaharchuk, G., Fan, et al
2020; 51 (1): 183–94
- **Tau PET imaging with 18F-PI-2620 in aging and neurodegenerative diseases.** *European journal of nuclear medicine and molecular imaging*
Mormino, E. C., Toueg, T. N., Azevedo, C. n., Castillo, J. B., Guo, W. n., Nadiadwala, A. n., Corso, N. K., Hall, J. N., Fan, A. n., Trelle, A. N., Harrison, M. B., Hunt, M. P., Sha, et al
2020
- **Deep Learning Detection of Penumbra Tissue on Arterial Spin Labeling in Stroke.** *Stroke*
Wang, K., Shou, Q., Ma, S. J., Liebeskind, D., Qiao, X. J., Saver, J., Salamon, N., Kim, H., Yu, Y., Xie, Y., Zaharchuk, G., Scalzo, F., Wang, et al
2019: STROKEAHA119027457
- **Predicting 15O-Water PET cerebral blood flow maps from multi-contrast MRI using a deep convolutional neural network with evaluation of training cohort bias.** *Journal of cerebral blood flow and metabolism : official journal of the International Society of Cerebral Blood Flow and Metabolism*
Guo, J., Gong, E., Fan, A. P., Goubran, M., Khalighi, M. M., Zaharchuk, G.
2019: 271678X19888123
- **Applications of Deep Learning to Neuro-Imaging Techniques** *FRONTIERS IN NEUROLOGY*
Zhu, G., Jiang, B., Tong, L., Xie, Y., Zaharchuk, G., Wintermark, M.
2019; 10
- **Identifying cardiovascular risk factors that impact cerebrovascular reactivity: An ASL MRI study.** *Journal of magnetic resonance imaging : JMRI*
Soman, S., Dai, W., Dong, L., Hitchner, E., Lee, K., Baughman, B. D., Holdsworth, S. J., Massaband, P., Bhat, J. V., Moseley, M. E., Rosen, A., Zhou, W., Zaharchuk, et al
2019
- **Rigid Motion Correction for Brain PET/MR Imaging Using Optical Tracking** *IEEE TRANSACTIONS ON RADIATION AND PLASMA MEDICAL SCIENCES*
Spangler-Bickell, M. G., Khalighi, M., Hoo, C., DiGiacomo, P., Maclaren, J., Aksoy, M., Rettmann, D., Bammer, R., Zaharchuk, G., Zeineh, M., Jansen, F.
2019; 3 (4): 498–503
- **Rigid Motion Correction for Brain PET/MR Imaging using Optical Tracking.** *IEEE transactions on radiation and plasma medical sciences*
Spangler-Bickell, M. G., Khalighi, M. M., Hoo, C., DiGiacomo, P. S., Maclaren, J., Aksoy, M., Rettmann, D., Bammer, R., Zaharchuk, G., Zeineh, M., Jansen, F.
2019; 3 (4): 498-503
- **Ultra-low-dose PET Reconstruction using Generative Adversarial Network with Feature Matching and Task-Specific Perceptual Loss.** *Medical physics*
Ouyang, J., Chen, K. T., Gong, E., Pauly, J., Zaharchuk, G.
2019
- **State of the Art PET/MRI: Applications and Limitations - Summary of the First ISMRM/SNMMI Co-Provided Workshop on PET/MRI.** *Journal of nuclear medicine : official publication, Society of Nuclear Medicine*
Hope, T. A., Fayad, Z. A., Fowler, K. J., Holley, D., Iagaru, A. H., McMillan, A., Veit-Haibach, P., Witte, R. J., Zaharchuk, G., Catana, C.
2019
- **Impact of attenuation correction on image-derived input functions and cerebral blood flow quantification with simultaneous [O-15]-water PET/MRI**
Hjoernevik, T., Khalighi, M., Kaushik, S., Ishii, Y., Zaharchuk, G., Fan, A.
SOC NUCLEAR MEDICINE INC.2019
- **Ischemic Core and Hypoperfusion Volumes Correlate With Infarct Size 24 Hours After Randomization in DEFUSE 3 STROKE**
Rao, V., Christensen, S., Yennu, A., Mlynash, M., Zaharchuk, G., Heit, J., Marks, M. P., Lansberg, M. G., Albers, G. W.
2019; 50 (3): 626–31
- **Ultra-Low-Dose F-18-Florbetaben Amyloid PET Imaging Using Deep Learning with Multi-Contrast MRI Inputs** *RADIOLOGY*
Chen, K. T., Gong, E., Macruz, F., Xu, J., Boumis, A., Khalighi, M., Poston, K. L., Sha, S. J., Greicius, M. D., Mormino, E., Pauly, J. M., Srinivas, S., Zaharchuk, et al
2019; 290 (3): 649–56
- **Elevated brain oxygen extraction fraction measured by MRI susceptibility relates to perfusion status in acute ischemic stroke.** *Journal of cerebral blood flow and metabolism : official journal of the International Society of Cerebral Blood Flow and Metabolism*

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- Fan, A. P., Khalil, A. A., Fiebach, J. B., Zaharchuk, G., Villringer, A., Villringer, K., Gauthier, C. J.
2019: 271678X19827944
- **Ischemic Core and Hypoperfusion Volumes Correlate With Infarct Size 24 Hours After Randomization in DEFUSE 3.** *Stroke*
Rao, V., Christensen, S., Yennu, A., Mlynash, M., Zaharchuk, G., Heit, J., Marks, M. P., Lansberg, M. G., Albers, G. W.
2019: STROKEAHA118023177
 - **Identifying Hypoperfusion in Moyamoya Disease With Arterial Spin Labeling and an [O-15]-Water Positron Emission Tomography/Magnetic Resonance Imaging Normative Database** *STROKE*
Fan, A. P., Khalighi, M. M., Guo, J., Ishii, Y., Rosenberg, J., Wardak, M., Park, J., Shen, B., Holley, D., Gandhi, H., Haywood, T., Singh, P., Steinberg, et al
2019; 50 (2): 373–80
 - **Prediction of Subacute Infarction in Acute Ischemic Stroke Using Baseline Multi-modal MRI and Deep Learning**
Yu Yannan, Xie, Y., Thamm, T., Chen, K. T., Gong Enhao, Zaharchuk, G.
LIPPINCOTT WILLIAMS & WILKINS.2019
 - **Union of Ischemic Core and Hypoperfusion Volume Correlates With 24-hour Infarct Size in DEFUSE 3**
Rao, V., Christensen, S., Yennu, A., Mylnash, M., Zaharchuk, G., Heit, J., Marks, M. P., Lansberg, M. G., Albers, G. W.
LIPPINCOTT WILLIAMS & WILKINS.2019
 - **Identifying Hypoperfusion in Moyamoya Disease With Arterial Spin Labeling and an [15O]-Water Positron Emission Tomography/Magnetic Resonance Imaging Normative Database.** *Stroke*
Fan, A. P., Khalighi, M. M., Guo, J., Ishii, Y., Rosenberg, J., Wardak, M., Park, J. H., Shen, B., Holley, D., Gandhi, H., Haywood, T., Singh, P., Steinberg, et al
2019: STROKEAHA118023426
 - **Deep learning enables automatic detection and segmentation of brain metastases on multisequence MRI.** *Journal of magnetic resonance imaging : JMIR*
Grøvik, E. n., Yi, D. n., Iv, M. n., Tong, E. n., Rubin, D. n., Zaharchuk, G. n.
2019
 - **MRI safety and devices: An update and expert consensus.** *Journal of magnetic resonance imaging : JMIR*
Jabehdar Maralani, P. n., Schieda, N. n., Hecht, E. M., Litt, H. n., Hindman, N. n., Heyn, C. n., Davenport, M. S., Zaharchuk, G. n., Hess, C. P., Weinreb, J. n.
2019
 - **Deep Generative Adversarial Neural Networks for Compressive Sensing MRI** *IEEE TRANSACTIONS ON MEDICAL IMAGING*
Mardani, M., Gong, E., Cheng, J. Y., Vasanawala, S. S., Zaharchuk, G., Xing, L., Pauly, J. M.
2019; 38 (1): 167–79
 - **Arterial-Spin Labeling MRI Identifies Residual Cerebral Arteriovenous Malformation Following Stereotactic Radiosurgery Treatment.** *Journal of neuroradiology. Journal de neuroradiologie*
Heit, J. J., Thakur, N. H., Iv, M. n., Fischbein, N. J., Wintermark, M. n., Dodd, R. L., Steinberg, G. K., Chang, S. D., Kapadia, K. B., Zaharchuk, G. n.
2019
 - **Advantages of short repetition time resting-state functional MRI enabled by simultaneous multi-slice imaging** *JOURNAL OF NEUROSCIENCE METHODS*
Jahanian, H., Holdsworth, S., Christen, T., Wu, H., Zhu, K., Kerr, A. B., Middione, M. J., Dougherty, R. F., Moseley, M., Zaharchuk, G.
2019; 311: 122–32
 - **Use of Gradient Boosting Machine Learning to Predict Patient Outcome in Acute Ischemic Stroke on the Basis of Imaging, Demographic, and Clinical Information** *AMERICAN JOURNAL OF ROENTGENOLOGY*
Xie, Y., Jiang, B., Gong, E., Li, Y., Zhu, G., Michel, P., Wintermark, M., Zaharchuk, G.
2019; 212 (1): 44–51
 - **Next generation research applications for hybrid PET/MR and PET/CT imaging using deep learning.** *European journal of nuclear medicine and molecular imaging*
Zaharchuk, G. n.
2019
 - **Contralateral Hemispheric Cerebral Blood Flow Measured With Arterial Spin Labeling Can Predict Outcome in Acute Stroke.** *Stroke*
Thamm, T. n., Guo, J. n., Rosenberg, J. n., Liang, T. n., Marks, M. P., Christensen, S. n., Do, H. M., Kemp, S. M., Adair, E. n., Eyngorn, I. n., Mlynash, M. n., Jovin, T. G., Keogh, et al
2019: STROKEAHA119026499
-

- **Simultaneous phase-contrast MRI and PET for noninvasive quantification of cerebral blood flow and reactivity in healthy subjects and patients with cerebrovascular disease.** *Journal of magnetic resonance imaging : JMRI*
Ishii, Y. n., Thamm, T. n., Guo, J. n., Khalighi, M. M., Wardak, M. n., Holley, D. n., Gandhi, H. n., Park, J. H., Shen, B. n., Steinberg, G. K., Chin, F. T., Zaharchuk, G. n., Fan, et al
2019
- **Can diffusion- and perfusion-weighted imaging alone accurately triage anterior circulation acute ischemic stroke patients to endovascular therapy?** *JOURNAL OF NEUROINTERVENTIONAL SURGERY*
Wolman, D. N., Iv, M., Wintermark, M., Zaharchuk, G., Marks, M. P., Do, H. M., Dodd, R. L., Albers, G. W., Lansberg, M. G., Heit, J. J.
2018; 10 (12): 1132-+
- **Revealing sub-voxel motions of brain tissue using phase-based amplified MRI (aMRI)** *MAGNETIC RESONANCE IN MEDICINE*
Terem, I., Ni, W. W., Goubran, M., Rahimi, M., Zaharchuk, G., Yeom, K. W., Moseley, M. E., Kurt, M., Holdsworth, S. J.
2018; 80 (6): 2549-59
- **Striatal dopamine deficits predict reductions in striatal functional connectivity in major depression: a concurrent 11C-raclopride positron emission tomography and functional magnetic resonance imaging investigation.** *Translational psychiatry*
Hamilton, J. P., Sacchet, M. D., Hjernevik, T., Chin, F. T., Shen, B., Kampe, R., Park, J. H., Knutson, B. D., Williams, L. M., Borg, N., Zaharchuk, G., Camacho, M. C., Mackey, et al
2018; 8 (1): 264
- **Striatal dopamine deficits predict reductions in striatal functional connectivity in major depression: a concurrent C-11-raclopride positron emission tomography and functional magnetic resonance imaging investigation** *TRANSLATIONAL PSYCHIATRY*
Hamilton, J., Sacchet, M. D., Hjernevik, T., Chin, F. T., Shen, B., Kampe, R., Park, J., Knutson, B. D., Williams, L. M., Borg, N., Zaharchuk, G., Camacho, M., Mackey, et al
2018; 8
- **Advanced Neuroimaging of Acute Ischemic Stroke: Penumbra and Collateral Assessment.** *Neuroimaging clinics of North America*
Heit, J. J., Zaharchuk, G., Wintermark, M.
2018; 28 (4): 585-97
- **Use of Gradient Boosting Machine Learning to Predict Patient Outcome in Acute Ischemic Stroke on the Basis of Imaging, Demographic, and Clinical Information.** *AJR. American journal of roentgenology*
Xie, Y., Jiang, B., Gong, E., Li, Y., Zhu, G., Michel, P., Wintermark, M., Zaharchuk, G.
2018: 1-7
- **Advantages of Short Repetition Time Resting-State Functional MRI Enabled by Simultaneous Multi-slice Imaging.** *Journal of neuroscience methods*
Jahanian, H., Holdsworth, S., Christen, T., Wu, H., Zhu, K., Kerr, A. B., Middione, M. J., Dougherty, R. F., Moseley, M., Zaharchuk, G.
2018
- **Quantitative susceptibility mapping using deep neural network: QSMnet** *NEUROIMAGE*
Yoon, J., Gong, E., Chatnuntawech, I., Bilgic, B., Lee, J., Jung, W., Ko, J., Jung, H., Setsompop, K., Zaharchuk, G., Kim, E., Pauly, J., Lee, et al
2018; 179: 199-206
- **ISLES 2016 and 2017-Benchmarking Ischemic Stroke Lesion Outcome Prediction Based on Multispectral MRI** *FRONTIERS IN NEUROLOGY*
Winzeck, S., Hakim, A., McKinley, R., Pinto, J. R., Alves, V., Silva, C., Pisov, M., Krivov, E., Belyaev, M., Monteiro, M., Oliveira, A., Choi, Y., Palk, et al
2018; 9
- **ISLES 2016 and 2017-Benchmarking Ischemic Stroke Lesion Outcome Prediction Based on Multispectral MRI.** *Frontiers in neurology*
Winzeck, S., Hakim, A., McKinley, R., Pinto, J. A., Alves, V., Silva, C., Pisov, M., Krivov, E., Belyaev, M., Monteiro, M., Oliveira, A., Choi, Y., Paik, et al
2018; 9: 679
- **Hypoxia Detection in Infiltrative Astrocytoma: Ferumoxytol-based Quantitative BOLD MRI with Intraoperative and Histologic Validation**
Maralani, P., Das, S., Mainprize, T., Phan, N., Bharatha, A., Keith, J., Munoz, D. G., Sahgal, A., Symons, S., Ironside, S., Faraji-Dana, Z., Eilaghi, A., Chan, et al
RADIOLOGICAL SOC NORTH AMERICA.2018: 821-29
- **Consensus statement on current and emerging methods for the diagnosis and evaluation of cerebrovascular disease** *JOURNAL OF CEREBRAL BLOOD FLOW AND METABOLISM*
Donahue, M. J., Achten, E., Cogswell, P. M., De Leeuw, F., Derdeyn, C. P., Dijkhuizen, R. M., Fan, A. P., Ghaznawi, R., Heit, J. J., Ikram, M., Jezzard, P., Jordan, L. C., Jouvent, et al
2018; 38 (9): 1391-1417

- **Erroneous Resting-State fMRI Connectivity Maps Due to Prolonged Arterial Arrival Time and How to Fix Them** *BRAIN CONNECTIVITY*
Jahanian, H., Christen, T., Moseley, M. E., Zaharchuk, G.
2018; 8 (6): 362–70
- **Deep learning enables reduced gadolinium dose for contrast-enhanced brain MRI** *JOURNAL OF MAGNETIC RESONANCE IMAGING*
Gong, E., Pauly, J. M., Wintermark, M., Zaharchuk, G.
2018; 48 (2): 330–40
- **The vast potential and bright future of neuroimaging.** *The British journal of radiology*
Wintermark, M., Colen, R., Whitlow, C. T., Zaharchuk, G.
2018: 20170505
- **Revealing sub-voxel motions of brain tissue using phase-based amplified MRI (aMRI).** *Magnetic resonance in medicine*
Terem, I., Ni, W. W., Goubran, M., Rahimi, M. S., Zaharchuk, G., Yeom, K. W., Moseley, M. E., Kurt, M., Holdsworth, S. J.
2018
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