OMB No. 3145-0279 (Expiration Date 10/31/2026)

NIH BIOGRAPHICAL SKETCH COMMON FORM

Name: Dehkharghani, Seena

Persistent Identifier (PID) of the Senior/Key Person: https://orcid.org/0000-0002-3141-1094

Position Title: Professor of Radiology, Vice Chair, Informatics

Organization and Location: Stanford University School of Medicine, Stanford, California, United States

PROFESSIONAL PREPARATION

INSTITUTION AND LOCATION	DEGREE	Start Date	Completion Date	FIELD OF STUDY
Stanford University School of Engineering SCPD, Center of Global Education, Stanford, California, United States	Other training	01/2025	12/2025	Computer Science
Stanford University Hospital, Stanford, California, United States	Fellow	07/2008	06/2010	Neuroradiology
St. Joseph's Hospital and Medical Center, Barrow Neurological Institute, Phoenix, Arizona, United States	Other training	07/2007	06/2008	Chief Resident - Diagnostic Radiology
St. Joseph's Hospital and Medical Center, Barrow Neurological Institute, Phoenix, Arizona, United States	Resident	07/2004	06/2008	Diagnostic Radiology
Banner Health: University Medical Center, University of Arizona College of Medicine, Phoenix, Arizona, United States	Other training	07/2002	06/2003	Preliminary Medicine
University of Missouri, Kansas City, Missouri, United States	Bachelor of Arts (BA)	08/1996	05/2002	Medicine
University of Missouri Accelerated MD-BA Program, Kansas City, Missouri, United States	Doctor of Medicine (MD)	08/1996	05/2002	Medicine

Appointments and Positions

2025 - present	Professor of Radiology, Vice Chair, Informatics, Stanford University School of Medicine, Stanford, California, United States
2025 - present	Professor, Affiliate Faculty, Wu Tsai Neuroscience Institute Stanford University School of Medicine, Stanford, California, United States
2025 - present	Professor, Affiliate Faculty, Artificial Intelligence in Medicine and Imaging (AIMI) Institute Stanford University, Stanford, California, United States
2025 - present	Professor, Affiliate Faculty, Integrated Bioinformatics in Imaging at Stanford (IBIIS) Stanford University School of Medicine, Stanford, California, United States
2025 - present	Attending Physician, Stanford University Hospital/Department of Radiology, Stanford, California, United States
2025 - present	Medical Informatics Director, Office of the CMIO (Topher Sharp, MD) Stanford Healthcare, Stanford, California, United States
2025 - present	Associate Chair, Informatics, Stanford University Hospital, Stanford, California, United States
2024 - present	Professor of Radiology, Neurology, and Neuroscience, Vice Chair, Operations, Albert Einstein College of Medicine, New York, New York, United States
2024 - present	Adjunct Professor, New York University Langone Medical Center/Department of Radiology, New York, New York, United States
2024 - 2024	Professor of Radiology, Neurology, and Neuroscience, Montefiore Medical Center-Albert Einstein College of Medicine, New York, New York, United States

2024 - 2024	Vice Chair of Clinical Operations, Montefiore Medical Center/Department of Radiology, New York, New York, United States
2024 - 2024	Director, Technology and Innovation in Medical Imaging, Montefiore Medical Center-Einstein College of Medicine/Department of Radiology, New York, New York, United States
2021 - 2024	Professor of Radiology, New York University Grossman School of Medicine, New York, New York, United States
2021 - 2024	Professor of Neurology, New York University Grossman School of Medicine, New York, New York, United States
2009 - 2010	Clinical Instructor Neuroradiology, Stanford University Hospital, Palo Alto, California, United States

Products

Products Closely Related to the Proposed Project

1. Zhu Y, Dogra S, Wang X, Polimeni JR, Dehkharghani S. Automated In-line Normalization Procedure for BOLD-CVR Using the Resting-State Temporal Shift with Machine Learning. AJNR Am J Neuroradiol. 2026 Feb 25; PubMed PMID: 41741218.
2. Dehkharghani S, Yaghi S, Bowen MT, Pisani L, Scher E, Haussen DC, Nogueira RG. Mild fever as a catalyst for consumption of the ischaemic penumbra despite endovascular reperfusion. Brain Commun. 2020;2(2):fcaa116. PubMed Central PMCID: PMC7532660.
3. Dehkharghani S, Fleischer CC, Qiu D, Yepes M, Tong F. Cerebral Temperature Dysregulation: MR Thermographic Monitoring in a Nonhuman Primate Study of Acute Ischemic Stroke. AJNR Am J Neuroradiol. 2017 Apr;38(4):712-720. PubMed Central PMCID: PMC5389900.
4. Dogra S, Wang X, Gee JM, Zhu Y, Ishida K, Dehkharghani S. Using Data-Driven Methods to Improve Brain Blood Flow Measurements in Cerebrovascular Disease with Dynamic Imaging. AJNR Am J Neuroradiol. 2025 Nov 3;46(11):2228-2234. PubMed Central PMCID: PMC12629562.
5. Fleischer CC, Wu J, Qiu D, Park SE, Nahab F, Dehkharghani S. The Brain Thermal Response as a Potential Neuroimaging Biomarker of Cerebrovascular Impairment. AJNR Am J Neuroradiol. 2017 Nov;38(11):2044-2051. PubMed Central PMCID: PMC5690840.

Other Significant Products Highlighting Contributions to Science

1. Dogra S, Wang X, Gupta A, Veraart J, Ishida K, Qiu D, Dehkharghani S. Acetazolamide-augmented BOLD MRI to Assess Whole-Brain Cerebrovascular Reactivity in Chronic Steno-occlusive Disease Using Principal Component Analysis. Radiology. 2023 May;307(3):e221473. PubMed Central PMCID: PMC10140639.
2. Dehkharghani S, Mao H, Howell L, Zhang X, Pate KS, Magrath PR, Tong F, Wei L, Qiu D, Fleischer C, Oshinski JN. Proton resonance frequency chemical shift thermometry: experimental design and validation toward high-resolution noninvasive temperature monitoring and in vivo experience in a nonhuman primate model of acute ischemic stroke. AJNR Am J Neuroradiol. 2015 Jun;36(6):1128-35. PubMed Central PMCID: PMC4894329.
3. Alon L, Dehkharghani S. A stroke detection and discrimination framework using broadband microwave scattering on stochastic models with deep learning. Sci Rep. 2021 Dec 20;11(1):24222. PubMed Central PMCID: PMC8688451.
4. Dehkharghani S, Bammer R, Straka M, Albin LS, Kass-Hout O, Allen JW, Rangaraju S, Qiu D, Winningham MJ, Nahab F. Performance and Predictive Value of a User-Independent Platform for CT Perfusion Analysis: Threshold-Derived Automated Systems Outperform Examiner-Driven Approaches in Outcome Prediction of Acute Ischemic Stroke. AJNR Am J Neuroradiol. 2015 Aug;36(8):1419-25. PubMed Central PMCID: PMC7964678.
5. Dehkharghani S, Bowen M, Haussen DC, Gleason T, Prater A, Cai Q, Kang J, Nogueira RG. Body Temperature Modulates Infarction Growth following Endovascular Reperfusion. AJNR Am J Neuroradiol. 2017 Jan;38(1):46-51. PubMed Central PMCID: PMC7963665.

Certification:

I certify that the information provided is current, accurate, and complete. This includes, but is not limited to, information related to current, pending, and other support (both foreign and domestic) as defined in 42 U.S.C. § 6605.

In accordance with Section 10632 of the CHIPS and Science Act of 2022 (42 U.S.C. § 19232), each individual identified as a senior/key person must certify that they are not a party to a malign foreign talent recruitment program.

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Misrepresentations and/or omissions may be subject to prosecution and liability pursuant to, but not limited to, 18 U.S.C. §§287, 1001, 1031 and 31 U.S.C. §§3729-3733 and 3802.

Certified by Dehkharghani, Seena in SciENcv on 2026-05-27 12:25:25

NIH BIOGRAPHICAL SKETCH SUPPLEMENT

Name: Dehkharghani, Seena

Persistent Identifier (PID) of the Senior/Key Person: https://orcid.org/0000-0002-3141-1094

Position Title: Professor of Radiology, Vice Chair, Informatics

Organization and Location: Stanford University School of Medicine, Stanford, California, United States

Personal Statement

We propose to develop realistic computational models of ischemic stroke and bridge a heretofore unattempted multiscale and multiphysics view of neuroenergetic disturbance in the ischemic brain. The merger of a state of the art in silico neurobiological canvas with more than a decade of insights from rigorous experimental neuroscience and biophysical modeling points us to disturbed thermoregulation/dysthermia at the critical intersection of cerebral perfusion, metabolism, viability, and hence neuroenergetic balance. Cerebral dysthermia will be formalized in a radical departure from the historically perfusion-centered frame of reference in cerebrovascular ischemia, the latter having shown unfit to capture fully the adaptive, dynamic metabolic changes that subserve the ischemic brain. We leverage the pathoanatomic realism of our complete multiscale vascular, flow, and perfusion model tuned to direct measures of cerebral perfusion, oximetry, and thermography across hemodynamics states in individuals subjected to hemodynamics provocation, linking two procedures developed by my lab: time-resolved BOLD cerebrovascular reactivity with acetazolamide and the brain thermal response (BTR). Successful completion of the aims presented herein represent a new direction of cerebrovascular and neurometabolic research enabled by traditionally unattainable biomarker ensembles based in non-invasive, spatiotemporally-resolved brain thermography.
My research spans human, animal, and phantom studies of cerebral metabolism and perfusion, emphasizing thermometry and neuroenergetics. This work in ischemic thermometry was twice recognized with the Foundation of the ASNR Scholar Award in Neuroradiology Research. My group has developed novel computational models for cerebral hemodynamics (dynamic BOLD-CVR) and first-of-kind hyperportable microwave stroke detection tools using deep learning. I have obtained formal certification (Mathworks, Google) in machine learning and data analytics and remain engaged in self-learning in AI/ML methodologies. I have also been a post-graduate student through the Stanford University School of Engineering SCPD program in computer science, through which I have garnered university credits in Computer Science, again with a focus in artificial intelligence. I have completed the Stanford University School of Engineering formal program in Artificial Intelligence, with core competencies in machine learning, Bayesian Networks, Markov Decision Processes, and Deep Learning.
I maintain strong multidisciplinary collaborations worldwide, particularly with Prof. Greg Albers and the Stanford Stroke Center. I returned to Stanford in Feb 2025 as Professor and Associate Chair of Informatics, and as Affiliate Faculty of the Wu Tsai Neuroscience Institute, Stanford Artificial Intelligence in Medicine and Imaging (AIMI) Center, Center for Digital Health (CDH), and Human-Centered AI (HAI) Institute. My longstanding collaborations with Dr. Albers (Director of the Stanford Stroke Center and co-inventor of RAPID) will facilitate the procedure of identifying appropriate subjects with steno-occlusive disease and my experience in translational neuroimaging will guide development of meaningful numerical models.
Ongoing projects that I would like to highlight include:
1R01EB034820-01 (NIBIB)
Absolute Brain Thermography using Multinuclear MRI
Role: submitting/contact PI, MPI Alon. Conversion to MPI with MPI Alon. 08/24-28

Honors

2023	Fellow of the American Heart Association (FAHA), International Stroke Council, American Heart Association
2023	Annual Meeting Program Committee Selected Plenary: From Innerspace to Outer Space: Imaging in a Shared Cosmos , International Society of Magnetic Resonance in Medicine
2022	Annual Meeting Program Committee Selected Plenary: Mind the Gap: from magnetic to electrical and other Physical Properties of Biological Tissues, International Society of Magnetic Resonance in Medicine
2022	Table Chair, Neuroimaging, International Society for Magnetic Resonance in Medicine Annual Meeting Program Committee (3 year AMPC member)
2022 - 2026	Deputy Editor, Neuroimaging for Journal of Magnetic Resonance Imaging, International Society for Magnetic Resonance in Medicine

2017	Editor’s Pick for The Brain Thermal Response as a Potential Neuroimaging Biomarker of Cerebrovascular Impairment, American Journal of Neuroradiology
2017	Inaugural Invited Presentation NYU Langone Center for Stroke and Neurovascular Disease Current Strategies and Future Directions for Cerebrovascular Research, CSND Opening Ceremony
2016	Visiting Professorship and honorary, All India Institute of Medical Science (AIIMS, New Delhi), AIIMS
2015	Appointment to Council of Early Career Investigators (CECI), Academy of Radiology Research
2014 - 2018	Distinguished Reviewer Recognition, Journal of Magnetic Resonance Imaging (JMRI)
2013 - 2024	ASNR Research Committee, The American Society of Neuroradiology
2012 - 2018	Editor’s Certificate for Distinguished Reviewers , American Journal of Neuroradiology (AJNR)
2012 - 2014	ASNR Scholar Award in Neuroradiology Research “Investigating the Utility of MR Thermometry and Perfusion in the Evaluation of Cerebrovascular Ischemia: Applications to the Ischemic Penumbra Model of Neurovascular Injury” , American Society of Neuroradiology
2011	Honorary Society Membership, Sociedade Cearense de Radiologia/Radiologic Society of Ceara
2006	Resident/Fellow Research Award , Radiologic Society of North America (RSNA)

Contributions to Science

1. As recipient of the American Society of Neuroradiology Scholar Award in Neuroradiology Research in 2012-2013 and 2013-2014, one of only two investigators ever awarded in successive years, and recipient of the Emory University Research Council Award, my group developed a custom flow-modulated phantom to test and validate non-invasive MRI thermometry techniques leveraging inherently temperature-sensitive NMR phenomena (Dehkharghani, "Proton resonance frequency chemical shift thermometry: experimental design and validation toward high-resolution noninvasive temperature monitoring and in vivo experience in a nonhuman primate model of acute ischemic stroke"). We showed the feasibility and described the technical framework for absolute thermography in vitro as well as in the healthy and ischemic non-human primate and human brain, including first-ever demonstration of dynamic dysthermia in the phylogenetically similar rhesus macaque following controlled stroke induction. Through our work we identified multiple factors relating both to the physicochemical environment and to acquisition strategies that undermine truly quantitative thermometry, insights advanced through our current R01 (Absolute Multinuclear Thermometry, MPI Dehkharghani and Alon) using the water-sodium chemical shift as well as multi-bandpass adiabatic 1H thermometry at 3T and 7T.

2. I led the first study of automated, fully user-independent CT perfusion using dynamic bolus passage linked to Meier-Zierler tracer kinetics (Dehkharghani, "Performance and Predictive Value of a User-Independent Platform for CT Perfusion Analysis: Threshold-Derived Automated Systems Outperform Examiner-Driven Approaches in Outcome Prediction of Acute Ischemic Stroke"), a technique enabled by the first embodiment of the RAPID processing tools in CT, which later proved central to multiple landmark ischemic trials and which are in use in more than 2000 hospitals worldwide. I subsequently led the first formalized analysis of perfusion profiles in human posterior circulation, underscoring critical differences from antecedent anterior circulation stroke perfusion selection strategies. I am experienced in the technical, computational, and clinical aspects of perfusion imaging and specifically in the development of neuroimaging biomarker ensembles and leveraging data-driven methods. As former Director of Stroke Imaging at Emory University Hospital and the Bernie Marcus Stroke and Neuroscience Center and subsequently as Director of Stroke and Cerebrovascular Imaging Programs, Chair of Research in the Center for Stroke and Neurovascular Disease, and Neuroimaging lead in the Stroke Steering Committee at New York University, I have participated in multiple landmark ischemic stroke trials, including as co-investigator or technical consultant in SWIFT-PRIME, CRISP, and DAWN, and have been recognized as a Fellow of the American Hearth Association, and rare honor for radiologists..

3. My group was first to describing the presence of occult, transient and unsustained phases in the cerebrovascular response to hemodynamic provocation with acetazolamide (Dogra et al. "Acetazolamide-augmented BOLD MRI to Assess Whole-Brain Cerebrovascular Reactivity in Chronic Steno-occlusive Disease Using Principal Component Analysis" Radiology), a pharmacologic stimulus in widespread use for decades for cerebrovascular researchers and practitioners for assessment of cerebrovascular reactivity (CVR). While most often paired with discrete perfusion imaging acquisitions, such as with radionuclide scintigraphy (SPECT) or CT and MR perfusion techniques, we have leveraged advanced spatiotemporal denoising techniques linked to Marchenko-Pastur principle component analysis (MPPCA), we have advanced the initial BOLD-CVR technique first introduced by my group, moving beyond traditional approaches that rely simply on terminal phases of reactivity, hence enabling fully time-resolved dynamic CVR analysis that captures previously hidden transient CVR maxima and time-to-maxima in a paradigm shifting package of techniques. We have subsequently reported extensively on this approach including extensions to the intrinsic low-frequency oscillations of the baseline (i.e. resting state) BOLD signal (accepted, in press). This experimental imaging model further supported the first description of the Brain Thermal Response by my group, documenting the dynamic cooling effects of hemodynamics augmentation under the influence of vasoactive stimuli using multiphase brain thermometry, recapitulating bioheat and hemodynamics theory in the living human subject for the first time (Fleischer et al. "The Brain Thermal Response as a Potential Neuroimaging Biomarker of Cerebrovascular Impairment" AJNR) which undergirds this application.

4. Automated detection algorithms are of considerable interest to the cerebrovascular imaging and stroke neuroscience community, leveraging advanced computational strategies from post-graduate training machine learning and computer vision to rapidly assess complex neuroimaging. Among several dozen studies focused on development of automated algorithms for detection, segmentation, or prognostication in stroke, we reported the first and to date highest performing instrumentation for this purpose in a multicenter, international study published in Radiology, the leading journal in our field (Dehkharghani, "High-Performance Automated Anterior Circulation CT Angiographic Clot Detection in Acute Stroke: A Multireader Comparison"). This technology represented a forward iteration of paired studies published earlier in Stroke by our group and remains the gold standard in the field. We have reported on a multitude of other complementary AI-assisted tools using custom 2D and 3D convolutional networks that have reached full FDA approval and clinical adoption, including in detection of intracranial hemorrhage, aneurysms, and ischemic stroke. Recently we have published on a comprehensive brain CT foundation model (Zhu et al. "3D foundation model for generalizable disease detection in head computed tomography". Nature: Biomedical Engineering) with a complementary brain MR foundation model and federated foundational brain imaging model actively in preparation.

5. My lab has also focused on exploration of hardware and software tools in our bioelectromagnetics laboratory at NYU. We sought to develop low-cost, rapidly deployable, low energy brain imaging and disease detection tools using custom ultra-wideband microwaves with deep learning to circumvent the inverse problem in microwave tomography. I was funded as a contact PI (MPI Alon) on a multiyear $2.3 million award through an application to the Google AI Social Impact Challenge to develop hyperportable, low-cost, non-ionizing tools to study macroscopic dielectric changes in tissue (Dehkharghani, "A stroke detection and discrimination framework using broadband microwave scattering on stochastic models with deep learning" Nature: Scientific Reports). Our group was first to report the benefits of ultra-wideband microwaves (>10GHz range) in order to improve detection of dielectric changes related to neurologic injury. We have developed custom computational/in silico tools, a physical benchtop and experimental framework and have successfully engineered human brain imaging prototypes (10Kg, targeted at 10K manufacturing costs) with first-of-kind microwave tomographic reconstruction using dedicated deep neural nets. This has supported subsequent benchtop phantom and in silico experimentation (Hedayati et al. "An experimental system for detection and localization of hemorrhage using ultra-wideband microwaves with deep learning". Nature: Communications Engineering) and active human subjects imaging with issued U.S. patents for the technology (Alon and Dehkharghani).

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