

Sevgi Gokce Kafali, M.S.

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EDUCATION

University of California, Los Angeles

Ph.D. Candidate in Bioengineering, supervised by Holden H. Wu Ph.D.
M.S. in Bioengineering (GPA: 3.78), supervised by Holden H. Wu Ph.D.

Los Angeles, CA, USA
07/2020- present
09/2018-06/2020

Bilkent University

M.S. in Electrical and Electronics Engineering, supervised by Emine Ulku Saritas Ph.D.
B.S. in Electrical and Electronics Engineering

Ankara, Turkey
09/2015-04/2018
09/2011-08/2015

University of Erlangen-Nuremberg

Electrical and Electronics Engineering, Exchange student

Erlangen, Germany
03/2014-08/2014

EXPERIENCE

Siemens Healthineers

Biomedical Engineering PhD Intern, supervised by Xiaodong Zhong Ph.D.

Los Angeles, CA, USA
06/2021-09/2021

- Evaluated a work-in-progress imaging sequence using different reconstruction settings in phantoms

University of California, Los Angeles

Research Assistant

Los Angeles, CA, USA
09/2018-present

- *Project 1:* to improve the current prototype free-breathing liver MR elastography technique with faster data acquisition and motion compensation in children and adults in comparison with the reference standard breath-held MR elastography.
- *Project 2:* to segment the adipose tissue (visceral and subcutaneous) automatically, accurately and rapidly in MR images in adults and children, using deep learning.

Teaching Assistant

- Advanced Topics in Magnetic Resonance Imaging M229
- Physics of Diagnostic Radiology PBM205

Spring 2020, Spring 2021
Fall 2019

Bilkent University

Research Assistant

Ankara, Turkey
02/2015-04/2018

- Enhanced the image quality in diffusion weighted MRI images of the spinal cord by eliminating low SNR limitations and phase issues induced by physiological motion.

Teaching Assistant

- Signals & Systems EEE321
- Microprocessors EEE212
- Engineering Mathematics MATH241

Fall 2017
Spring 2016, Fall 2016, Spring 2017, Spring 2018
Fall 2015

RESEARCH INTERESTS

Medical Image Processing, Deep Learning and Neural Networks, Quantitative Magnetic Resonance Imaging (MRI), Medical Image Reconstruction

ACHIEVEMENTS and AWARDS

Trainee Stipend (Monetary Award)

ISMRM MRE Workshop

2022

Pediatric Study Group Best Abstract Finalist (Monetary Award)

ISMRM

2022

Magna Cum Laude Award (top 15% abstracts)

ISMRM

2017, 2020 (x2), 2022

Travel Grant Award

IEEE ISBI

2020

Bioengineering Department Fellowship

University of California, Los Angeles

2018

Educational Stipend

ISMRM

2016-2018

100% Merit Scholarship for MS studies

Bilkent University

2015-2018

Monthly Stipend for MS studies

Bilkent University

2015-2018

50% Merit Scholarship for BS studies

Bilkent University

2011-2015

JOURNAL PUBLICATIONS

1. KM Strobel, **SG Kafali**, S Shih, AM Artura, R Masamed, D Elashoff, HH Wu, and KL Calkins. *Pregnancies complicated by gestational diabetes and fetal growth restriction: an analysis of maternal and fetal body composition using magnetic resonance imaging.* J Perinatol. DOI: 10.1038/s41372-022-01549-5 (2022).

2. S Shih, **SG Kafali**, KL Calkins and HH Wu. *Uncertainty-Aware Physics-Driven Deep Learning Network for Free-Breathing Liver Fat and R_2^* Quantification using Self-Gated Stack-of-Radial MRI* Magn Reson Med. DOI: 10.1002/mrm.29525 (2022).
3. BA Barlas, CD Bahadir, **SG Kafali**, U Yilmaz, EU Saritas. *Sheared 2D RF Excitation for Off-resonance Robustness and Fat Suppression in Reduced Field-of-View Imaging* Magn Reson Med. DOI: 10.1002/mrm.29416 (2022).
4. J Story, S Ghahremani, **SG Kafali**, SF Shih, K Kuwahara, KL Calkins, HH Wu. *Using Free-Breathing MRI to Quantify Pancreatic Fat and Investigate Spatial Heterogeneity in Children.* J Magn Reson Imaging. DOI: 10.1002/jmri.28337. (2022).
5. **SG Kafali**, T Armstrong, S Shih, GJ Kim, JL Holtrop, RS Venick, S Ghahremani, BD Bolster Jr., CM Hillenbrand, KL Calkins, HH Wu. *Free-Breathing Radial Magnetic Resonance Elastography of the Liver in Children at 3T: A Pilot Study.* Pediatric Radiology. 52, 1314–1325 (2022).
6. X Zhong, T Armstrong, C Gao, MD Nickel, F Han, BM Dale, X Li, **SG Kafali**, P Hu, HH. Wu, V Deshpande. *Accelerated k -Space Shift Calibration for Free-Breathing Stack-of-Radial MRI Quantification of Liver Fat and R_2^* ,* Magn Reson Med. 87.1: 281-291 (2021).
7. **SG Kafali**, T Cukur and EU Saritas. *Phase-Correcting Non-Local Means Filtering for Diffusion Weighted Imaging of the Spinal Cord,* Magn Reson Med. 80.3: 1020-1035, (2018).

CONFERENCE PAPERS

1. **SG Kafali**, S Shih, X Li, S Chowdhury, S Loong, S Barnes, Z Li, HH Wu. *3D Neural Networks for Visceral and Subcutaneous Adipose Tissue Segmentation using Volumetric Multi-Contrast MRI,* 2021 43rd Annual International Conference of the IEEE Engineering in Medicine Biology Society (EMBC), pp. 3933-3937, doi: 10.1109/EMBC46164.2021.9630110 PMID: 34892092. (2021) **(Oral presentation)**
2. SF Shih, **SG Kafali**, T Armstrong, X Zhong, KL Calkins and HH Wu, *Deep Learning-Based Parameter Mapping With Uncertainty Estimation For Fat Quantification Using Accelerated Free-Breathing Radial MRI* 2021 IEEE 18th International Symposium on Biomedical Imaging (ISBI), pp. 433-437, doi: 10.1109/ISBI48211.2021.9433938. (2021) **(Oral presentation)**
3. **SG Kafali**, S Shih, D Ruan and HH Wu, *Adaptive Locally Low Rank and Sparsity Constrained Reconstruction for Accelerated Dynamic MRI* 2020 IEEE 17th International Symposium on Biomedical Imaging (ISBI), pp. 930-934, doi: 10.1109/ISBI45749.2020.9098461. (2020) **(Oral presentation, Travel Grant Award)**
4. **SG Kafali**, T Cukur, EU Saritas. *Simultaneous Phase-Correction and Denoising For Diffusion-Weighted MRI,* SIU, Zonguldak, Turkey, p. 1313-1316. (2016) **(Oral presentation)**

CONFERENCE PROCEEDINGS

1. **SG Kafali**, BD Bolster Jr., S Shih, GJ Kim, S Ghahremani, KL Calkins, HH Wu. *Radial Free-Breathing Liver MR Elastography in Children using Self-Navigation and Rapid Fractional Encoding,* ISMRM MRE Workshop, Berlin, 2022. **(Oral presentation)**
2. **SG Kafali**, S Shih, X Li, S Chowdhury, S Loong, S Barnes, Z Li, HH Wu. *Automated Adipose Tissue Segmentation using 3D Attention-Based Competitive Dense Networks and Volumetric Multi-Contrast MRI,* ISMRM, London, 2022. **(Oral presentation, Magna Cum Laude Award)**
3. **SG Kafali**, BD Bolster Jr., S Shih, GJ Kim, J Yeh, RS Venick, S Ghahremani, KL Calkins, HH Wu. *Self-Navigated Radial Free-Breathing Magnetic Resonance Elastography of the Liver with Rapid Motion Encoding in Children at 3T,* ISMRM, London, 2022. **(Oral presentation)**
4. S Shih, **SG Kafali**, KL Calkins, HH Wu. *Uncertainty-Aware Physics-Driven Deep Learning Network for Fat and R_2^* Quantification in Self-Gated Free-Breathing Stack-of-Radial MRI,* ISMRM, London, 2022. **(Oral presentation)**
5. H Parish, S Shih, S Ghahremani, **SG Kafali**, KL Calkins, HH Wu. *Quantifying Infant Lean Body Mass using Free-Breathing 3D Stack-of-Radial MRI,* ISMRM, London, 2022. **(Oral presentation)**
6. J Story, **SG Kafali**, S Shih, K Kuwahara, KL Calkins, S Ghahremani, HH Wu. *Region-Based Pancreatic Fat Quantification Using Free-Breathing MRI Characterizes Fat Spatial Heterogeneity and is Associated with Insulin Resistance in Overweight Children,* Pediatric Academic Societies, 2022. **(Oral presentation)**
7. **SG Kafali**, S Shih, X Li, T Armstrong, K Kuwahara, S Govardhan, KV Ly, S Ghahremani, KL Calkins, HH Wu. *A Densely Connected Neural Network with Frequency Balancing Loss for Adipose Tissue Segmentation in Children using Free-Breathing Abdominal MRI,* ISMRM, Virtual conference, p2263, 2021.
8. J Story, **SG Kafali**, S Shih, KL Calkins, S Ghahremani, HH Wu. *Using Free-Breathing MRI to Characterize Heterogeneity of Pancreatic Fat in Children with Nonalcoholic Fatty Liver Disease,* ISMRM, Virtual conference, p354, 2021. **(Oral presentation, Magna Cum Laude Award)**
9. KM Strobel, **SG Kafali**, S Shih, R Masamed, KL Calkins, and HH Wu. *Quantifying Fetal and Maternal Body Composition using 3-D Stack-of-Radial Free-Breathing MRI,* ISMRM, Virtual conference, p2278, 2021.
10. S Shih, **SG Kafali**, T Armstrong, X Zhong, KL Calkins, and HH Wu. *Deep-learning Based Liver Fat and R_2^* mapping with Uncertainty Estimation using Self-Gated Free-Breathing Stack-of-Radial MRI,* ISMRM, Virtual conference, p3847, 2021.

11. BA Barlas, CD Bahadir, **SG Kafali**, U Yilmaz, EU Saritas. *Off-resonance Robustness in Reduced FOV Imaging using Sheared 2DRF Excitation*, ISMRM, Virtual conference, p779, 2021. **(Oral presentation)**
12. KM Strobel, **SG Kafali**, S Shih, R Masamed, HH Wu, and KL Calkins. *Investigating fetal body composition using magnetic resonance imaging*. Western Society of Pediatric Research (WSPR), Virtual conference, 2021. **(Oral presentation, Abbot David W. Smith Pediatric Trainee Research Award)**
13. KM Strobel, **SG Kafali**, S Shih, R Masamed, HH Wu, and KL Calkins. *Maternal Adiposity and Gestational Diabetes are Associated with Fetal Liver Fat: A 3-D Free Breathing MRI Study*. Proceedings of the PAS Annual Meeting, 2021.
14. J Story, **SG Kafali**, S Shih, KL Calkins, S Ghahremani, HH Wu. *A Practical and Accurate Method to Quantify Pancreatic Fat on MRI in Children with Non-Alcoholic Fatty Liver Disease*. Western Society of Pediatric Research (WSPR), Virtual conference, 2021. **(Oral presentation)**
15. **SG Kafali**, S Shih, X Li, T Armstrong, KV Ly, S Ghahremani, KL Calkins, HH Wu. *Fully Convolutional Networks for Adipose Tissue Segmentation Using Free-Breathing Abdominal MRI in Healthy and Overweight Children*, ISMRM, Virtual conference, p71, 2020. **(Oral presentation, Magna Cum Laude Award)**
16. **SG Kafali**, T Armstrong, S Shih, JL Holtrop, RS Venick, S Ghahremani, BD Bolster Jr, CM Hillenbrand, KL Calkins, and HH Wu. *Assessment of Free-Breathing Radial Magnetic Resonance Elastography in Healthy Children and Children with Liver Disease at 3T*, ISMRM, Virtual conference, p87, 2020. **(Oral presentation, Magna Cum Laude Award)**
17. S Shih, T Armstrong, **SG Kafali**, X Zhong, KL Calkins, HH Wu. *Rapid Free-Breathing Volumetric Liver Fat and R2* Quantification using Soft-Gating and Sparsity-Promoting Tensor Reconstruction*, ISMRM, Virtual conference, p330, 2020. **(Oral presentation, Magna Cum Laude Award)**
18. D Cho, **SG Kafali**, S Shih, T Armstrong, S Ghahremani, HH Wu, KL Calkins. *Measuring Infant Body Composition with Free-Breathing MRI*, California Association of Neonatologists (CAN), Coronado, USA, 2020
19. S Shih, **SG Kafali**, X Li, X Zhong, T Armstrong, HH Wu. *Deep Learning-Based Reconstruction for Radial MRI using Magnitude and Phase Dense U-Nets*, ISMRM Workshop on Data Sampling and Reconstruction, Sedona, USA, 2020
20. **SG Kafali**, AC Aydinkarahaliloglu, T Cukur and EU Saritas. *Anisotropic Diffusion Filter for Simultaneous Combination and Denoising of Multiple Acquisitions in DWI of the Spinal Cord*, ISMRM, Paris, France, p.1626, 2018.
21. **SG Kafali**, T Cukur and EU Saritas. *Joint Non-local Means Reconstruction for Correction of Phase-Induced Errors in Diffusion Tensor Imaging.*, ISMRM, Hawaii, USA, p.3332. 2017. **(Magna Cum Laude Award)**
22. **SG Kafali**, T Cukur and EU Saritas. *Phase-correcting Non-local Means Denoising for Diffusion-Weighted Imaging*, ISMRM, Singapore, p.2050, 2016.

SKILLS

Programming skills

MATLAB

Python (PyTorch, TensorFlow)

C/C++

Siemens IDEA Programming

Language skills

English, Fluent

German, Intermediate, B2 certificate (2015)

Turkish, Native

Miscellaneous

Siemens MR scanner operation

DICOM Softwares (Horos, OsiriX, 3D Slicer)

Human Subject Research Training

ACADEMIC SOCIETIES

International Society in Magnetic Resonance in Medicine (ISMRM)

Institute of Electrical and Electronics Engineers (IEEE)

Institute of Electrical and Electronics Engineers (IEEE) Engineering in Medicine and Biology Society (EMBS)

Radiological Society of North America (RSNA)

RELEVANT COURSES

Signal and Image Processing for Biomedicine, Digital Image Processing, Deep Learning and Neural Networks, Advanced Topics in Magnetic Resonance Imaging, Foundations of Magnetic Resonance Imaging, Biomedical Instrumentation

PROFESSIONAL SERVICE

Reviewer for journal of Quantitative Imaging in Medicine and Surgery (QIMS)

Reviewer for ISMRM Annual Meeting

VOLUNTEER WORK

Mentor at Bilkent Alumni Student Mentoring Program