Curriculum Vitae

Mei-Lan Chu, Ph.D.

Assistant Professor of Biomedical Sciences and Engineering, National Central University, Taiwan

Research Interests

Ultrafast parametric mapping of magnetic resonance imaging (MRI)
High-throughput multi-contrast MRI
MR novel contrast development
MR pulse sequence design
Signal processing and medical image processing

Education

National Taiwan University	Ph.D. in Biomedical Electronics and Bioinformatics	2009-2015
National Taiwan University	B.S. in Electrical Engineering	2004-2008

Academic Career

Department of Biomedical Sciences and Engineering, National Central University, Taiwan	Assistant Professor	2018 - present
Brain Imaging and Analysis Center, Duke University, U.S.A.	Postdoctoral Associate	2015-2017
Brain Imaging and Analysis Center, Duke University, U.S.A.	Visiting Scholar	2012-2015

Active Funding

MOST-107-2636-E-008-002 (Einstein Program) Ministry of Science and Technology, Taiwan	Principal Investigator	2018-2023

Professional Activities

Awards and special recognitions:

2018 **MOST Young Scholar Fellowship,** Ministry of Sciences and Technology, Taiwan
2017 **Summa Cum Laude Merit Award**, International Society for Magnetic Resonance in Medicine, U.S.A.
2015 **Best Ph.D. Dissertation Award**, Graduate Institute of Biomedical Electronics and Bioinformatics, National Taiwan University, Taiwan
2015 **Magna Cum Laude Merit Award**, International Society for Magnetic Resonance in Medicine, U.S.A.
2015 **Educational Stipend Award**, International Society for Magnetic Resonance in Medicine, U.S.A.
2014 **Magna Cum Laude Merit Award**, International Society for Magnetic Resonance in Medicine, U.S.A.
2014 **Student Stipend Award**, Foundation for the Advancement of Outstanding Scholarship, Taiwan
2013 **Educational Stipend Award**, International Society for Magnetic Resonance in Medicine, U.S.A.
2012 **Educational Stipend Award**, International Society for Magnetic Resonance in Medicine, U.S.A.

Review for journals and conferences:

Reviewer, Scientific Reports
Reviewer, NMR in Biomedicine
Reviewer, Annual meeting for Biomedical Engineering Society
Reviewer, Annual meeting for International Society for Magnetic Resonance in Medicine
Reviewer, Current Trends in Medical Diagnostic Methods

Organizations and participations:

Member, International Society for Magnetic Resonance in Medicine, U.S.A. (since 2010)

Invited Lectures and Oral Presentations

Invited lecture: "High-resolution, motion-immune and ultra-fast MRI". Department of Computer Science and Information Engineering, National Taiwan University. (Taipei, Taiwan)	Mar. 2019
Invited lecture: "Ultra-fast multi-contrast MR imaging". Department of Biomedical Engineering, University of Arizona. (Tucson, USA)	Jan. 2019
Invited lecture: "Magnetic Resonance Imaging". Taoyuan General Hospital (Taoyuan, Taiwan)	Feb.-Jul. 2018
Oral presentation: "Ultrafast T2 mapping using echo-split GRASE acquisition and parametric POCSMUSE reconstruction". Annual meeting of the International Society for Magnetic Resonance in Medicine. (Honolulu, USA)	Apr. 2017
Invited lecture: "POCS-based reconstruction of Multiplexed sensitivity encoded MRI". Department of Biomedical Engineering, University of Arizona. (Tucson, USA)	Feb. 2017
Invited lecture: "High-resolution, motion-immune and ultra-fast MRI". Department of Biomedical Sciences and Engineering, National Central University. (Taoyuan, Taiwan)	Feb. 2017
Oral presentation: "Correction of 3D motion induced artifacts in multi-shot diffusion imaging using POCSMUSE". Annual meeting of the International Society for Magnetic Resonance in Medicine. (Toronto, Canada)	May. 2015
Oral presentation: "High-resolution diffusion weighted MRI enabled by multiplexed sensitivity encoding using POCSMUSE". Annual meeting of the International Society for Magnetic Resonance in Medicine. (Milan, Italy)	May. 2014
Invited lecture: "Numerical Optimization". Department of Electrical Engineering, National Taiwan University of Science and Technology (Taipei, Taiwan)	Jun. 2011

Teaching Experiences

Lecturer	Introduction to Linear Algebra, Probability and Statistics (2018 Fall & 2017 Spring) Biomedical Imaging (2018 Fall) Embedded System (2018 Spring) Biostatistics (2018 Spring)	Department of Biomedical Engineering National Central University, Taiwan
Lecturer	Magnetic Resonance Imaging (Feb - Jul 2018)	Taoyuan General Hospital, Taiwan
Teaching Assistant	Probability and Statistics (2011) Electronics III (2009,2010) Signal and Systems (2010)	Department of Electrical Engineering National Taiwan University, Taiwan

Publications

Journal articles:

1. **Chu ML**, Chang HC, Chung HW, Bashir M, Cai J, Zhang L, Sun D, Chen NK. Free-breathing abdominal MRI improved by repeated k-t-subsampling and artifact-minimization (ReKAM). Medical Physics 2018; 45(1): 178-190.
2. **Chu ML**, Chang HC, Oshio K, Chen NK. A single-shot T2 mapping protocol based on echo-split GRASE acquisition and parametric-POCSMUSE reconstruction. Magn Reson Med. 2018; 79(1):383-393.
3. Chou YH, Sundman M, Whitson H, Gaur P, **Chu ML**, Weingarten C, Madden D, Wang L, Kirste I, Joliot M, Diaz M, Li YJ, Song AW, Chen NK. Regulation and Representation of Mind Wandering during Resting-State fMRI. Scientific Reports 2017; 7:40722.
4. Chiu SC, Chang HC, **Chu ML**, Wu ML, Chung HW, Lin YR. De-aliasing for signal restoration in Propeller MR imaging. Magn Reson Imag 2017; 36: 12-15.
5. **Chu ML**, Chang HC, Chung HW, Truong TK, Bashir MR, Chen NK. POCS-based reconstruction of multiplexed sensitivity encoded MRI (POCSMUSE): a general algorithm for reducing motion-related artifacts. Magn Reson Med. 2015; 74(5):1336-1348.
6. Guhaniyogi S, **Chu ML**, Chang HC, Song AW, Chen NK. Motion immune diffusion imaging using augmented MUSE (AMUSE) for high-resolution multi-shot EPI. Magn Reson Med. 2015; 75(2): 639-652.

7. Chang HC, Sundman M, Petit L, Guhaniyogi S, **Chu ML**, Petty C, Song AW, Chen NK. Human brain diffusion tensor imaging at submillimeter isotropic resolution on a 3Tesla clinical MRI scanner. Neuroimage. 2015; 118: 667-675.
8. Liu Y, Yin FF, Chen NK, **Chu ML**, Cai J. Four Dimensional Magnetic Resonance Imaging (4D-MRI) with Retrospective K-space Sorting: a Feasibility Study. Medical Physics 2015; 42(2): 534-541.
9. Chang HC, Gaur P, Chou YH, **Chu ML**, Chen NK. Interleaved EPI based fMRI improved by multiplexed sensitivity encoding (MUSE) and simultaneous multi-band imaging. PLOS ONE 2014; 9(12): e116378.

Papers in peer-reviewed conference proceedings:

1. **Chu ML**, Cheng TC, Chen NK. Dixon-like multi-contrast GRASE imaging framework: simultaneous acquisition of two T2-weighted spin-echo images and an inverse-T1-weighted stimulated-echo image. In: Proceedings of the ISMRM annual meeting; 2019. **(Oral Presentation)**
2. Chen S, **Chu ML**, Chan Q, Chang HC. Reconstruction of highly-accelerated multi-echo fMRI using parametric POCS based multiplexed sensitivity-encoding (POCSMUSE). In: Proceedings of the ISMRM annual meeting; 2019. (submitted)
3. **Chu ML**, Chen NK. Simultaneous T1 and T2 parametric mapping and synthetic MRI with IR-prepared echo-split gradient-echo and spin-echo imaging and parametric POCSMUSE reconstruction. In: Proceedings of the ISMRM annual meeting; Paris, France; 2018.
4. **Chu ML**, Chang HC, Oshio K, Chen NK. Ultrafast T2 mapping using echo-split GRASE acquisition and parametric POCSMUSE reconstruction. In: Proceedings of the ISMRM annual meeting; Honolulu, USA; 2017. **(Oral Presentation, Summa Cum Laude Merit Award, top 5% papers)**
5. **Chu ML**, Guidon A, Chang HC, Chen NK. Inherent correction of both geometric distortion and motion-induced aliasing artifacts in multi-shot diffusion-weighted EPI. In: Proceedings of the ISMRM annual meeting; Singapore; 2016.
6. Guidon A, Feng MM, Estkowski Lloyd, **Chu ML**, Chen NK, Bayram E. High-resolution Multi-Station Diffusion imaging using accelerated Multi-Shot Acquisition Mode. In: Proceedings of the ISMRM annual meeting; Singapore; 2016.
7. Chang HC, **Chu ML**, Chen NK. Joint reconstruction of high-SNR multiple b-values diffusion-weighted images using projection onto convex sets based multiplexed sensitivity-encoding (POCSMUSE). In: Proceedings of the ISMRM annual meeting; Singapore; 2016.
8. Chang HC, **Chu ML**, Chen NK. Reconstruction of under-sampled Propeller gradient-echo image using projection onto convex sets based multiplexed sensitivity-encoding (POCSMUSE). In: Proceedings of the ISMRM annual meeting; Singapore; 2016.
9. **Chu ML**, Guhaniyogi S, Chang HC, Chen NK. Correction of 3D motion induced artifacts in multi-shot diffusion imaging using projection onto convex sets based multiplexed sensitivity-encoding MRI (POCSMUSE). In: Proceedings of the ISMRM annual meeting; Toronto, Canada; 2015. **(Oral Presentation, Magna Cum Laude Merit Award, top 15% papers)**
10. **Chu ML**, Chang HC, Oshio K, Chen NK. Multi-contrast, parametric and artifact-free images reconstructed from gradient-echo and spin-echo (GRASE) imaging data using projection onto convex sets based multiplexed sensitivity encoding (POCSMUSE). In: Proceedings of the ISMRM annual meeting; Toronto, Canada; 2015.
11. **Chu ML**, Chang HC, Chung HW, Truong TK, Bashir MR, Chen NK. POCS-based reconstruction of multiplexed sensitivity encoded MRI (POCSMUSE): a general algorithm for reducing motion-related artifacts. In: Proceedings of the ISMRM annual meeting; Toronto, Canada; 2015.
12. Guhaniyogi S, **Chu ML**, Chang HC, Song AW, Chen NK. Motion immune diffusion imaging using augmented MUSE (AMUSE) for high-resolution multi-shot EPI. In: Proceedings of the ISMRM annual meeting; Toronto, Canada; 2015.
13. Guhaniyogi S, **Chu ML**, Chen NK. Automatic identification of motion in multishot MRI using convolutional neural networks. In: Proceedings of the ISMRM annual meeting; Toronto, Canada; 2015.
14. Chang HC, **Chu ML**, Sundman M, Chen NK. High-quality and self-navigated diffusion-weighted imaging enabled by a novel interleaved block-segmented (iblocks) EPI. In: Proceedings of the ISMRM annual meeting; Toronto, Canada; 2015.
15. Chang HC, Guidon A, Xu D, Estkowski L, Bayram E, **Chu ML**, Bashir M, Song AW, Chen NK. High-resolution abdominal diffusion-weighted imaging based on multi-shot and multiplexed sensitivity encoded echo-planar imaging. In: Proceedings of the ISMRM annual meeting; Toronto, Canada; 2015
16. **Chu ML**, Chang HC, Chen NK. High-resolution diffusion weighted MRI enabled by multiplexed sensitivity-encoding using projection on convex set (POCSMUSE). In: Proceedings of the ISMRM annual meeting; Milan, Italy; 2014. **(Oral Presentation, Magna Cum Laude Merit Award, top 15% papers)**
17. **Chu ML**, Chang HC, Bashir M, Chen NK. High-quality free-breathing abdominal MR imaging enabled by Repeated K-t-subsampling and Artifact-Minimization (ReKAM). In: Proceedings of the ISMRM annual meeting; Milan, Italy; 2014.

18. Guhaniyogi S, **Chu ML**, Chang HC, Song AW, Chen NK. Simultaneous Correction of Motion-Induced Artifacts and Diffusion-Encoding Corruption in Multishot Diffusion Tensor EPI. In: Proceedings of the ISMRM annual meeting; Milan, Italy; 2014.
19. Guhaniyogi S, Chang HC, **Chu ML**, Song AW, Chen NK. Inherent Correction of Rigid-Body Motion in Fast Spin-Echo Imaging. In: Proceedings of the ISMRM annual meeting; Milan, Italy; 2014.
20. **Chu ML**, Chen NK. Motion-immune structural MRI based on repeated k-t-subsampling and artifact-minimization (REKAM). In: Proceedings of the ISMRM annual meeting; Salt Lake City, USA; 2013.
21. **Chu ML**, Chung HW, Lin YR, Chao TC. Spatiotemporal acceleration of dynamic MR imaging without training data: prior-data-driven k-t PCA. In: Proceedings of the ISMRM annual meeting; Melbourne, Australia; 2012.
22. **Chu ML**, Tsai PH, Chung HW, Peng HH, Ko CW. On non-Cartesian reconstruction by prior-data-driven k-t PCA. Proc. In: Proceedings of the ISMRM annual meeting; Melbourne, Australia; 2012.
23. **Chu ML**, Hsu JS, Chung HW, Tsai SY, Lin YR. Reconstruction of accelerated dynamic contrast-enhanced Lung MR Imaging using Phase-Correlation Motion Estimation and Motion Compensation. In: Proceedings of the ISMRM annual meeting; Montreal, Canada; 2011.
24. **Chu ML**, Hsu JS, Chung HW. Reconstruction Exploiting Phase-Correlation Motion Estimation and Motion Compensation Methods for Cine Cardiac Imaging. In: Proceedings of the ISMRM annual meeting; Stockholm, Sweden; 2010.
25. **Chu ML**, Hsu JS, Chung HW. On Motion Estimation and Compensation Baseline Estimations in Dynamic Imaging: a Comparative Study with Cine Cardiac and Contrast-Enhanced Lung Imaging. In: Proceedings of the ISMRM annual meeting; Stockholm, Sweden; 2010.
26. Lee WF, Lin TY, **Chu ML**, Huang TH, Chen HH. Perceptual-based High Dynamic Range Compression in Gradient Domain. In: Proceedings of IEEE International Conference on Image Processing (ICIP), pp. 1805-1808, Egypt, 2009.
27. Lee WF, Lin TY, **Chu ML**, Huang TH, Chen HH. Efficient Construction of Saliency Map. In: Proceedings of International Conference on Perception and Cognition in Electronic Media, Vol. 7240, pp. 724018-724018-8, California, 2008.

Patents

Chen NK, **Chu ML**, Song AW. Multi-Dimensional Motion-Immune MRI Enabled by K-T-Bootstrapping Analysis of Accelerated Scans. U.S. Patent: 14/769374, 2016.