



## Mirabela Rusu

Assistant Professor of Radiology (Integrative Biomedical Imaging Informatics) and, by courtesy, of Biomedical Data Science

### CONTACT INFORMATION

- **Administrative Contact**

Elizabeth Colvin - Administrative Associate

**Email** colvin@stanford.edu

**Tel** (650) 724-9286

### Bio

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#### BIO

Dr. Rusu is an Assistant Professor, in the Department of Radiology, and, by courtesy, Department of Urology and Biomedical Data Science, at Stanford University, where she leads the Personalized Integrative Medicine Laboratory (PIMed). The PIMed Laboratory has a multi-disciplinary direction and focuses on developing analytic methods for biomedical data integration, with a particular interest in radiology-pathology fusion to facilitate radiology image labeling. The radiology-pathology fusion allows the creation of detailed spatial labels, that later on can be used as input for advanced machine learning, such as deep learning. The recent focus of the lab has been on applying deep learning methods to detect and differentiate aggressive from indolent prostate cancers on MRI using the pathology information (both labels and the image content), work that was recently published in Medical Physics and Medical Image Analysis Journals. Moreover, our project are interested in further develop these approaches for ultrasound images.

Dr. Rusu received a Master of Engineering in Bioinformatics from the National Institute of Applied Sciences in Lyon, France. She continued her training at the University of Texas Health Science Center in Houston, where she received a Master of Science and PhD degree in Health Informatics for her work in biomolecular structural data integration of cryo-electron micrographs and X-ray crystallography models.

During her postdoctoral training at Rutgers and Case Western Reserve University, Dr. Rusu has developed computational tools for the integration and interpretation of multi-modal medical imaging data and focused on studying prostate and lung cancers. Prior to joining Stanford, Dr. Rusu was a Lead Engineer and Medical Image Analysis Scientist at GE Global Research Niskayuna NY where she was involved in the development of analytic methods to characterize biological samples in microscopy images and pathologic conditions in MRI or CT.

### ACADEMIC APPOINTMENTS

- Assistant Professor, Radiology
- Assistant Professor (By courtesy), Department of Biomedical Data Science
- Member, Bio-X
- Member, Maternal & Child Health Research Institute (MCHRI)
- Member, Stanford Cancer Institute

## HONORS AND AWARDS

- R37 MERIT Award, NIH NCI (2022-2026)
- Above and Beyond (6), GE Global Research (2015-2017)
- School of Engineering Innovation Award, Case Western Reserve University (2014)
- Postdoctoral Award for poster presentation at the Research ShowCASE, Case Western Reserve University (2013)
- Winner, Grand Challenge Automated SEgmentation of Prostate Structures, NCI-ISBI (2013)
- James T. and Nancy Beamer Willerson Endowed Scholarship, University of Texas Health Science Center in Houston (2010)
- Paul Boyle Award for Excellence in Student Research, University of Texas Health Science Center in Houston (2007)
- Undergraduate Research Fellowship, Keck Center for Computational and Structural Biology, Houston (2006)
- International Mobility Fellowship, Rhone-Alpes Region, France (2005)

## PROFESSIONAL EDUCATION

- PhD, University of Texas Health Science Center at Houston , Health Informatics | Structural Bioinformatics (2011)
- MS, University of Texas Health Science Center at Houston , Health Informatics | Structural Bioinformatics (2008)
- Master of Engineering, National Institute of Applied Sciences , BioSciences | Bioinformatics and Modeling (2006)

## PATENTS

- Anant Madabhushi, Mirabela Rusu. "United States Patent US9767555B2 Disease characterization from fused pathology and radiology data", Case Western Reserve University

## LINKS

- Lab Website: <http://rusulab.stanford.edu>

## Research & Scholarship

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### CURRENT RESEARCH AND SCHOLARLY INTERESTS

Dr. Mirabela Rusu focuses on developing analytic methods for biomedical data integration, with a particular interest in radiology-pathology fusion. Such integrative methods may be applied to create comprehensive multi-scale representations of biomedical processes and pathological conditions, thus enabling their in-depth characterization.

## Teaching

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### COURSES

#### 2024-25

- Computational Methods for Biomedical Image Analysis and Interpretation: BIOMEDIN 260, BMP 260, CS 235, RAD 260 (Spr)

#### 2023-24

- Computational Methods for Biomedical Image Analysis and Interpretation: BIOMEDIN 260, BMP 260, CS 235, RAD 260 (Spr)
- Seminar Series for Biomedical Physics: BMP 210, RAD 210 (Aut)

#### 2022-23

- Computational Methods for Biomedical Image Analysis and Interpretation: BIOMEDIN 260, BMP 260, CS 235, RAD 260 (Spr)

#### 2021-22

- Computational Methods for Biomedical Image Analysis and Interpretation: BIOMEDIN 260, CS 235, RAD 260 (Spr)

## STANFORD ADVISEES

### Doctoral Dissertation Reader (AC)

Laura Bravo Sánchez, Simon John Christoph Soerensen

### Postdoctoral Faculty Sponsor

Jeong Hoon Lee

## Publications

### PUBLICATIONS

- **ProstAtlasDiff: Prostate cancer detection on MRI using Diffusion Probabilistic Models guided by population spatial cancer atlases.** *Medical image analysis*  
Li, C. X., Bhattacharya, I., Vesal, S., Ghanouni, P., Jahanandish, H., Fan, R. E., Sonn, G. A., Rusu, M.  
2025; 101: 103486
- **ProCUSNet: Prostate Cancer Detection on B-mode Transrectal Ultrasound Using Artificial Intelligence for Targeting During Prostate Biopsies.** *European urology oncology*  
Rusu, M., Jahanandish, H., Vesal, S., Li, C. X., Bhattacharya, I., Venkataraman, R., Zhou, S. R., Kornberg, Z., Sommer, E. R., Khandwala, Y. S., Hockman, L., Zhou, Z., Choi, et al  
2025
- **Biomarkers.** *Alzheimer's & dementia : the journal of the Alzheimer's Association*  
Wang, Y., Ho, W. H., Huszar, I. N., Taghavi, H. M., Nirschl, J., Leventis, S., Schlömer, P., Axer, M., Shao, W., Rusu, M., DiGiacomo, P., Georgiadis, M., Zeineh, et al  
2024; 20 Suppl 2: e092110
- **Aggressiveness classification of clear cell renal cell carcinoma using registration-independent radiology-pathology correlation learning.** *Medical physics*  
Bhattacharya, I., Stacke, K., Chan, E., Lee, J. H., Tse, J. R., Liang, T., Brooks, J. D., Sonn, G. A., Rusu, M.  
2024
- **Evaluating Biparametric Versus Multiparametric Magnetic Resonance Imaging for Diagnosing Clinically Significant Prostate Cancer: An International, Paired, Noninferiority, Confirmatory Observer Study.** *European urology*  
Twilt, J. J., Saha, A., Bosma, J. S., van Ginneken, B., Bjartell, A., Padhani, A. R., Bonekamp, D., Villeirs, G., Salomon, G., Giannarini, G., Kalpathy-Cramer, J., Barentsz, J., Maier-Hein, et al  
2024
- **PViT-AIR: Puzzling vision transformer-based affine image registration for multi histopathology and faxitron images of breast tissue.** *Medical image analysis*  
Golestani, N., Wang, A., Moallem, G., Bean, G. R., Rusu, M.  
2024; 99: 103356
- **Trends in pre-biopsy MRI usage for prostate cancer detection, 2007-2022.** *Prostate cancer and prostatic diseases*  
Soerensen, S. J., Li, S., Langston, M. E., Fan, R. E., Rusu, M., Sonn, G. A.  
2024
- **Intraprocedural Diffusion-weighted Imaging for Predicting Ablation Zone during MRI-guided Focused Ultrasound of Prostate Cancer.** *Radiology. Imaging cancer*  
Bitton, R. R., Shao, W., Chodakeiwitz, Y., Brunsing, R. L., Sonn, G., Rusu, M., Ghanouni, P.  
2024; 6 (5): e240009
- **Inter-reader Agreement for Prostate Cancer Detection Using Micro-ultrasound: A Multi-institutional Study** *EUROPEAN UROLOGY OPEN SCIENCE*  
Zhou, S. R., Choi, M., Vesal, S., Kinnaird, A., Brisbane, W. G., Lughezzani, G., Maffei, D., Fasulo, V., Albers, P., Zhang, L., Kornberg, Z., Fan, R. E., Shao, et al  
2024; 66: 93-100
- **External validation of an artificial intelligence model for Gleason grading of prostate cancer on prostatectomy specimens.** *BJU international*

Schmidt, B., Soerensen, S. J., Bhambhani, H. P., Fan, R. E., Bhattacharya, I., Choi, M. H., Kunder, C. A., Kao, C. S., Higgins, J., Rusu, M., Sonn, G. A.

2024

- **Artificial intelligence and radiologists in prostate cancer detection on MRI (PI-CAI): an international, paired, non-inferiority, confirmatory study.** *The Lancet. Oncology*

Saha, A., Bosma, J. S., Twilt, J. J., van Ginneken, B., Bjartell, A., Padhani, A. R., Bonekamp, D., Villeirs, G., Salomon, G., Giannarini, G., Kalpathy-Cramer, J., Barentsz, J., Maier-Hein, et al

2024

- **Using Machine Learning Models to Identify Factors Associated With 30-Day Readmissions After Posterior Cervical Fusions: A Longitudinal Cohort Study.** *Neurospine*

Gonzalez-Suarez, A. D., Rezaii, P. G., Herrick, D., Tigchelaar, S. S., Ratliff, J. K., Rusu, M., Scheinker, D., Jeon, I., Desai, A. M.

2024

- **PREDICTORS OF TREATMENT FAILURE AFTER FOCAL HIGH-INTENSITY FOCUSED ULTRASOUND (HIFU) OF LOCALIZED PROSTATE CANCER**

Soerensen, S., Sommer, E. R., Zhou, S. R., Rusu, M., Fan, R. E., Sonn, G. A.

LIPPINCOTT WILLIAMS & WILKINS.2024: E411-E412

- **ARTIFICIAL INTELLIGENCE-ASSISTED PROSTATE CANCER DETECTION ON B-MODE TRANSRECTAL ULTRASOUND IMAGES**

Bhattacharya, I., Vesal, S., Jahanandish, H., Choi, M., Zhou, S., Kornberg, Z., Sommer, E., Fan, R. E., Brooks, J. D., Rusu, M., Sonn, G. A.

LIPPINCOTT WILLIAMS & WILKINS.2024: E511

- **AI VS. UROLOGISTS: A COMPARATIVE ANALYSIS FOR PROSTATE CANCER DETECTION ON TRANSRECTAL B-MODE ULTRASOUND**

Vesal, S., Bhattacharya, I., Jahanandish, H., Choi, M., Zhou, S., Kornberg, Z., Sommer, E., Fan, R. E., Rusu, M., Sonn, G. A.

LIPPINCOTT WILLIAMS & WILKINS.2024: E1056

- **RAPHIA: A deep learning pipeline for the registration of MRI and whole-mount histopathology images of the prostate.** *Computers in biology and medicine*

Shao, W., Vesal, S., Soerensen, S. J., Bhattacharya, I., Golestani, N., Yamashita, R., Kunder, C. A., Fan, R. E., Ghanouni, P., Brooks, J. D., Sonn, G. A., Rusu, M.

2024; 173: 108318

- **Improving Automated Prostate Cancer Detection and Classification Accuracy with Multi-scale Cancer Information**

Li, C., Bhattacharya, I., Vesal, S., Saunders, S., Soerensen, S., Fan, R. E., Sonn, G. A., Rusu, M., Cao, Xu, Rekik, Cui, Z., Ouyang

SPRINGER INTERNATIONAL PUBLISHING AG.2024: 341-350

- **A deep learning framework to assess the feasibility of localizing prostate cancer on b-mode transrectal ultrasound images**

Jahanandish, H., Vesal, S., Bhattacharya, I., Li, C., Fan, R. E., Sonn, G. A., Rusu, M., Boehm, B., Bottenus, N.

SPIE-INT SOC OPTICAL ENGINEERING.2024

- **Deep Learning for Prostate and Central Gland Segmentation on Micro-Ultrasound Images**

Zhang, L., Zhou, S., Choi, M., Fan, R. E., Sang, S., Sonn, G. A., Rusu, M., Boehm, B., Bottenus, N.

SPIE-INT SOC OPTICAL ENGINEERING.2024

- **SwinTransformer-Based Affine Registration of MRI and Ultrasound Images of the Prostate**

Sang, S., Jahanandish, H., Li, X., Vesal, S., Bhattacharya, I., Zhang, L., Fan, R. E., Sonn, G., Rusu, M., Boehm, B., Bottenus, N.

SPIE-INT SOC OPTICAL ENGINEERING.2024

- **Assessing breast cancer chemotherapy response in radiology and pathology reports via a Large Language Model**

Dodhia, P., Meepagala, S., Moallem, G., Rubin, D., Bean, G., Rusu, M., Yoshida, H., Wu, S.

SPIE-INT SOC OPTICAL ENGINEERING.2024

- **Automated Labeling of Spondylolisthesis Cases through Spinal MRI Radiology Report Interpretation using ChatGPT**

Moallem, G., Gonzalez, A., Desai, A., Rusu, M., Chen, W., Astley, S. M.

SPIE-INT SOC OPTICAL ENGINEERING.2024

- **ArHiFy: Artificial Histopathology-style Features for Improving MRI-Based Prostate Cancer Detection**

Bhattacharya, I., Shao, W., Li, X., Soerensen, S. C., Fan, R. E., Ghanouni, P., Brooks, J. D., Sonn, G. A., Rusu, M., Chen, W., Astley, S. M.

SPIE-INT SOC OPTICAL ENGINEERING.2024

- **Prediction and Mapping of Intraprostatic Tumor Extent with Artificial Intelligence.** *European urology open science*  
Priester, A., Fan, R. E., Shubert, J., Rusu, M., Vesal, S., Shao, W., Khandwala, Y. S., Marks, L. S., Natarajan, S., Sonn, G. A.  
2023; 54: 20-27
- **Identification of Factors Associated With 30-Day Readmissions After Posterior Lumbar Fusion Using Machine Learning and Traditional Models: A National Longitudinal Database Study.** *Spine*  
Rezaii, P. G., Herrick, D., Ratliff, J. K., Rusu, M., Scheinker, D., Desai, A. M.  
2023
- **DETECTION OF CLINICALLY SIGNIFICANT PROSTATE CANCER ON MRI: A COMPARISON OF AN ARTIFICIAL INTELLIGENCE MODEL VERSUS RADIOLOGISTS**  
Soerensen, S., Fan, R. E., Bhattacharya, I., Lim, D. S., Ahmadi, S., Li, X., Vesal, S., Rusu, M., Sonn, G. A.  
LIPPINCOTT WILLIAMS & WILKINS.2023: E103
- **IMPROVING PROSTATE CANCER DETECTION ON MRI WITH DEEP LEARNING, CLINICAL VARIABLES, AND RADIOMICS**  
Saunders, S., Li, X., Vesal, S., Bhattacharya, I., Soerensen, S. C., Fan, R. E., Rusu, M., Sonn, G. A.  
LIPPINCOTT WILLIAMS & WILKINS.2023: E665
- **Learn2Reg: Comprehensive Multi-Task Medical Image Registration Challenge, Dataset and Evaluation in the Era of Deep Learning** *IEEE TRANSACTIONS ON MEDICAL IMAGING*  
Hering, A., Hansen, L., Mok, T. W., Chung, A. S., Siebert, H., Hager, S., Lange, A., Kuckertz, S., Heldmann, S., Shao, W., Vesal, S., Rusu, M., Sonn, et al  
2023; 42 (3): 697-712
- **MIC-CUSP: Multimodal Image Correlations for Ultrasound-Based Prostate Cancer Detection**  
Bhattacharya, I., Vesal, S., Jahanandish, H., Choi, M., Zhou, S., Kornberg, Z., Sommer, E., Fan, R., Brooks, J., Sonn, G., Rusu, M., Kainz, B., Noble, et al  
SPRINGER INTERNATIONAL PUBLISHING AG.2023: 121-131
- **BreastRegNet: A Deep Learning Framework for Registration of Breast Faxitron and Histopathology Images**  
Golostani, N., Wang, A., Bean, G. R., Rusu, M., Hering, A., Woo, J., Silva, W., Li, Fu, H., Liu, Xing, F., Purushotham, S., Mathai, T. S., Mukherjee, et al  
SPRINGER INTERNATIONAL PUBLISHING AG.2023: 182-192
- **The Association of Tissue Change and Treatment Success During High-intensity Focused Ultrasound Focal Therapy for Prostate Cancer.** *European urology focus*  
Khandwala, Y. S., Soerensen, S. J., Morisettey, S., Ghanouni, P., Fan, R. E., Vesal, S., Rusu, M., Sonn, G. A.  
2022
- **A review of artificial intelligence in prostate cancer detection on imaging.** *Therapeutic advances in urology*  
Bhattacharya, I., Khandwala, Y. S., Vesal, S., Shao, W., Yang, Q., Soerensen, S. J., Fan, R. E., Ghanouni, P., Kunder, C. A., Brooks, J. D., Hu, Y., Rusu, M., Sonn, et al  
2022; 14: 17562872221128791
- **Domain generalization for prostate segmentation in transrectal ultrasound images: A multi-center study.** *Medical image analysis*  
Vesal, S., Gayo, I., Bhattacharya, I., Natarajan, S., Marks, L. S., Barratt, D. C., Fan, R. E., Hu, Y., Sonn, G. A., Rusu, M.  
2022; 82: 102620
- **Evaluation of post-ablation mpMRI as a predictor of residual prostate cancer after focal high intensity focused ultrasound (HIFU) ablation.** *Urologic oncology*  
Khandwala, Y. S., Morisettey, S., Ghanouni, P., Fan, R. E., Soerensen, S. J., Rusu, M., Sonn, G. A.  
2022
- **Deep learning-based pseudo-mass spectrometry imaging analysis for precision medicine.** *Briefings in bioinformatics*  
Shen, X., Shao, W., Wang, C., Liang, L., Chen, S., Zhang, S., Rusu, M., Snyder, M. P.  
2022
- **Computational Detection of Extraprostatic Extension of Prostate Cancer on Multiparametric MRI Using Deep Learning.** *Cancers*  
Moroianu, S. L., Bhattacharya, I., Seetharaman, A., Shao, W., Kunder, C. A., Sharma, A., Ghanouni, P., Fan, R. E., Sonn, G. A., Rusu, M.  
2022; 14 (12)

- **Bridging the gap between prostate radiology and pathology through machine learning.** *Medical physics*  
Bhattacharya, I., Lim, D. S., Aung, H. L., Liu, X., Seetharaman, A., Kunder, C. A., Shao, W., Soerensen, S. J., Fan, R. E., Ghanouni, P., To'o, K. J., Brooks, J. D., Sonn, et al  
2022
- **Correlation of 68Ga-RM2 PET with Post-Surgery Histopathology Findings in Patients with Newly Diagnosed Intermediate- or High-Risk Prostate Cancer.** *Journal of nuclear medicine : official publication, Society of Nuclear Medicine*  
Duan, H., Baratto, L., Fan, R. E., Soerensen, S. J., Liang, T., Chung, B. I., Thong, A. E., Gill, H., Kunder, C., Stoyanova, T., Rusu, M., Loening, A. M., Ghanouni, et al  
2022
- **Image quality assessment for machine learning tasks using meta-reinforcement learning.** *Medical image analysis*  
Saeed, S. U., Fu, Y., Stavrinides, V., Baum, Z. M., Yang, Q., Rusu, M., Fan, R. E., Sonn, G. A., Noble, J. A., Barratt, D. C., Hu, Y.  
2022; 78: 102427
- **Collaborative Quantization Embeddings for Intra-subject Prostate MR Image Registration**  
Shen, Z., Yang, Q., Shen, Y., Giganti, F., Stavrinides, V., Fan, R., Moore, C., Rusu, M., Sonn, G., Torr, P., Barratt, D., Hu, Y., Wang, et al  
SPRINGER INTERNATIONAL PUBLISHING AG.2022: 237-247
- **The Learn2Reg 2021 MICCAI Grand Challenge (PIMed Team)** *The Learn2Reg 2021 MICCAI Grand Challenge (PIMed Team)*  
Shao, W., Vesal, S., Lim, D., Li, C., Golestani, N., Alsinan, A., Fan, R., Sonn, G., Rusu, M.  
2022
- **Integrating zonal priors and pathomic MRI biomarkers for improved aggressive prostate cancer detection on MRI**  
Bhattacharya, I., Shao, W., Soerensen, S. C., Fan, R. E., Wang, J. B., Kunder, C., Ghanouni, P., Sonn, G. A., Rusu, M., Drukker, K., Iftikharuddin, K. M.  
SPIE-INT SOC OPTICAL ENGINEERING.2022
- **EXTERNAL VALIDATION OF AN ARTIFICIAL INTELLIGENCE ALGORITHM FOR PROSTATE CANCER GLEASON GRADING AND TUMOR QUANTIFICATION**  
Schmidt, B., Bhambhani, H. P., Fan, R. E., Kunder, C., Kao, C., Higgins, J. P., Rusu, M., Sonn, G. A.  
LIPPINCOTT WILLIAMS & WILKINS.2021: E1004
- **Deep Learning Improves Speed and Accuracy of Prostate Gland Segmentations on Magnetic Resonance Imaging for Targeted Biopsy** *JOURNAL OF UROLOGY*  
Soerensen, S., Fan, R. E., Seetharaman, A., Chen, L., Shao, W., Bhattacharya, I., Kim, Y., Sood, R., Borre, M., Chung, B., To'o, K. J., Rusu, M., Sonn, et al  
2021; 206 (3): 605-612
- **DETAILED ANALYSIS OF MRI CONCORDANCE WITH PROSTATECTOMY HISTOPATHOLOGY USING DEEP LEARNING-BASED DIGITAL PATHOLOGY**  
Hockman, L., Fan, R., Schmidt, B., Bhattacharya, I., Rusu, M., Sonn, G.  
LIPPINCOTT WILLIAMS & WILKINS.2021: E813-E814
- **Geodesic density regression for correcting 4DCT pulmonary respiratory motion artifacts.** *Medical image analysis*  
Shao, W., Pan, Y., Durumeric, O. C., Reinhardt, J. M., Bayouth, J. E., Rusu, M., Christensen, G. E.  
2021; 72: 102140
- **Deep Learning Improves Speed and Accuracy of Prostate Gland Segmentations on MRI for Targeted Biopsy.** *The Journal of urology*  
Soerensen, S. J., Fan, R. E., Seetharaman, A., Chen, L., Shao, W., Bhattacharya, I., Kim, Y., Sood, R., Borre, M., Chung, B. I., To'o, K. J., Rusu, M., Sonn, et al  
2021: 101097JU0000000000001783
- **Automated Detection of Aggressive and Indolent Prostate Cancer on Magnetic Resonance Imaging.** *Medical physics*  
Seetharaman, A., Bhattacharya, I., Chen, L. C., Kunder, C. A., Shao, W., Soerensen, S. J., Wang, J. B., Teslovich, N. C., Fan, R. E., Ghanouni, P., Brooks, J. D., To'o, K. J., Sonn, et al  
2021
- **3D Registration of pre-surgical prostate MRI and histopathology images via super-resolution volume reconstruction.** *Medical image analysis*

Sood, R. R., Shao, W. n., Kunder, C. n., Teslovich, N. C., Wang, J. B., Soerensen, S. J., Madhuripan, N. n., Jawahar, A. n., Brooks, J. D., Ghanouni, P. n., Fan, R. E., Sonn, G. A., Rusu, et al  
2021; 69: 101957

- **ProGNet: Prostate Gland Segmentation on MRI with Deep Learning**

Soerensen, S., Fan, R., Seetharaman, A., Chen, L., Shao, W., Bhattacharya, I., Borre, M., Chung, B., To'o, K., Sonn, G., Rusu, M., Isgum, Landman, B. A.

SPIE-INT SOC OPTICAL ENGINEERING.2021

- **Selective identification and localization of indolent and aggressive prostate cancers via CorrSigNIA: an MRI-pathology correlation and deep learning framework. *Medical image analysis***

Bhattacharya, I., Seetharaman, A., Kunder, C., Shao, W., Chen, L. C., Soerensen, S. J., Wang, J. B., Teslovich, N. C., Fan, R. E., Ghanouni, P., Brooks, J. D., Sonn, G. A., Rusu, et al

2021; 75: 102288

- **Weakly Supervised Registration of Prostate MRI and Histopathology Images**

Shao, W., Bhattacharya, I., Soerensen, S. C., Kunder, C. A., Wang, J. B., Fan, R. E., Ghanouni, P., Brooks, J. D., Sonn, G. A., Rusu, M., DeBruijne, M., Cattin, P. C., Cotin, et al

SPRINGER INTERNATIONAL PUBLISHING AG.2021: 98-107

- **Adaptable Image Quality Assessment Using Meta-Reinforcement Learning of Task Amenability**

Saeed, S. U., Fu, Y., Stavrinides, V., Baum, Z. C., Yang, Q., Rusu, M., Fan, R. E., Sonn, G. A., Noble, J., Barratt, D. C., Hu, Y., Noble, J. A., Aylward, et al

SPRINGER INTERNATIONAL PUBLISHING AG.2021: 191-201

- **Detecting Invasive Breast Carcinoma on Dynamic Contrast-Enhanced MRI**

Moroianu, S. L., Rusu, M., Mazurowski, M. A., Drukker, K.

SPIE-INT SOC OPTICAL ENGINEERING.2021

- **Intensity Normalization of Prostate MRIs using Conditional Generative Adversarial Networks for Cancer Detection**

DeSilvio, T., Moroianu, S., Bhattacharya, I., Seetharaman, A., Sonn, G., Rusu, M., Mazurowski, M. A., Drukker, K.

SPIE-INT SOC OPTICAL ENGINEERING.2021

- **Clinically significant prostate cancer detection on MRI with self-supervised learning using image context restoration**

Bolous, A., Seetharaman, A., Bhattacharya, I., Fan, R. E., Soerensen, S., Chen, L., Ghanouni, P., Sonn, G. A., Rusu, M., Mazurowski, M. A., Drukker, K.

SPIE-INT SOC OPTICAL ENGINEERING.2021

- **Registration of pre-surgical MRI and histopathology images from radical prostatectomy via RAPSODI. *Medical physics***

Rusu, M., Shao, W., Kunder, C. A., Wang, J. B., Soerensen, S. J., Teslovich, N. C., Sood, R. R., Chen, L. C., Fan, R. E., Ghanouni, P., Brooks, J. D., Sonn, G. A.

2020

- **ProsRegNet: A deep learning framework for registration of MRI and histopathology images of the prostate. *Medical image analysis***

Shao, W. n., Banh, L. n., Kunder, C. A., Fan, R. E., Soerensen, S. J., Wang, J. B., Teslovich, N. C., Madhuripan, N. n., Jawahar, A. n., Ghanouni, P. n., Brooks, J. D., Sonn, G. A., Rusu, et al

2020; 68: 101919

- **Multiscale, multimodal analysis of tumor heterogeneity in IDH1 mutant vs wild-type diffuse gliomas *PLOS ONE***

Berens, M. E., Sood, A., Barnholtz-Sloan, J. S., Graf, J. F., Cho, S., Kim, S., Kiefer, J., Byron, S. A., Halperin, R. F., Nasser, S., Adkins, J., Cuyugan, L., Devine, et al

2019; 14 (12): e0219724

- **AUTOMATED DETECTION OF PROSTATE CANCER ON MULTIPARAMETRIC MRI USING DEEP NEURAL NETWORKS TRAINED ON SPATIAL COORDINATES AND PATHOLOGY OF BIOPSY CORES**

Chen, L., Bien, N., Fan, R., Cheong, R., Rajpurkar, P., Thong, A., Wang, N., Ahmadi, S., Rusu, M., Brooks, J., Ng, A., Sonn, G.

LIPPINCOTT WILLIAMS & WILKINS.2019: E1098

- **ANISOTROPIC SUPER RESOLUTION IN PROSTATE MRI USING SUPER RESOLUTION GENERATIVE ADVERSARIAL NETWORKS**

Sood, R., Rusu, M., IEEE

IEEE.2019: 1688–91

- **Spatial integration of radiology and pathology images to characterize breast cancer aggressiveness on pre-surgical MRI**  
Rusu, M., Daniel, B., West, R., Angelini, E. D., Landman, B. A.  
SPIE-INT SOC OPTICAL ENGINEERING.2019
- **Framework for the co-registration of MRI and Histology Images in Prostate Cancer Patients with Radical Prostatectomy**  
Rusu, M., Kunder, C., Fan, R., Ghanouni, P., West, R., Sonn, G., Brooks, J., Angelini, E. D., Landman, B. A.  
SPIE-INT SOC OPTICAL ENGINEERING.2019
- **A deep learning-based algorithm for 2-D cell segmentation in microscopy images** *BMC BIOINFORMATICS*  
Al-Kofahi, Y., Zaltsman, A., Graves, R., Marshall, W., Rusu, M.  
2018; 19: 365
- **An Application of Generative Adversarial Networks for Super Resolution Medical Imaging**  
Sood, R., Topiwala, B., Choutagunta, K., Sood, R., Rusu, M., Wani, M. A., Kantardzic, M., Sayedmouchaweh, M., Gama, J., Lughofer, E.  
IEEE.2018: 326–31
- **Co-registration of pre-operative CT with ex vivo surgically excised ground glass nodules to define spatial extent of invasive adenocarcinoma on in vivo imaging: a proof-of-concept study.** *European radiology*  
Rusu, M., Rajiah, P., Gilkeson, R., Yang, M., Donatelli, C., Thawani, R., Jacono, F. J., Linden, P., Madabhushi, A.  
2017
- **Computational imaging reveals shape differences between normal and malignant prostates on MRI** *SCIENTIFIC REPORTS*  
Rusu, M., Puryrsko, A. S., Verma, S., Kiechle, J., Gollamudi, J., Ghose, S., Herrmann, K., Gulani, V., Paspulati, R., Ponsky, L., Bohm, M., Haynes, A., Moses, et al  
2017; 7
- **Prostate shapes on pre-treatment MRI between prostate cancer patients who do and do not undergo biochemical recurrence are different: Preliminary Findings** *Sci Rep*  
Ghose, S., Shiradkar, R., Rusu, M., Mitra, J., Thawani, R., Feldman, M., Gupta, A., Ponsky, L., Puryrsko, A., Madabhushi, A.  
2017; 7 (1): 15829
- **Field Effect Induced Organ Distension (FOrge) Features Predicting Biochemical Recurrence from Pre-treatment Prostate MRI** *Medical Image Computing and Computer Assisted Intervention. Medical Image Computing and Computer-Assisted Intervention (MICCAI)*  
Ghose, S., Shiradkar, R., Rusu, M., Mitra, J., Thawani, R., Feldman, M., Gupta, A., Puryrsko, A., Ponsky, L., Madabhushi, A.  
2017: 442-449
- **Co-Registration of ex vivo Surgical Histopathology and in vivo T2 weighted MRI of the Prostate via multi-scale spectral embedding representation** *Sci. Rep*  
Li, L., Pahwac, S., Penzias, G., Rusu, M., Gollamudi, J., Viswanath, S., Madabhushi, A.  
2017; 7: 8717
- **Identifying in vivo DCE MRI markers associated with microvessel architecture and gleason grades of prostate cancer** *JOURNAL OF MAGNETIC RESONANCE IMAGING*  
Singanamalli, A., Rusu, M., Sparks, R. E., Shih, N. N., Ziober, A., Wang, L., Tomaszewski, J., Rosen, M., Feldman, M., Madabhushi, A.  
2016; 43 (1): 149-158
- **Radiomics Analysis on FLT-PET/MRI for Characterization of Early Treatment Response in Renal Cell Carcinoma: A Proof-of-Concept Study** *Transl Oncol*  
Antunes, J., Viswanath, S., Rusu, M., Valls, L., Hoimes, C., Avril, N., Madabhushi, A.  
2016; 9 (2): 155-162
- **AutoStitcher: An Automated Program for Efficient and Robust Reconstruction of Digitized Whole Histological Sections from Tissue Fragments** *Sci Rep*  
Penzias, G., Janowczyk, A., Singanamalli, A., Rusu, M., Shih, N., Feldman, M., Stricker, P. D., Delprado, W., Tiwari, S., Böhm, M., Haynes, A., Ponsky, L., Viswanath, et al  
2016; 6: 29906
- **Framework for 3D histologic reconstruction and fusion with in vivo MRI: Preliminary results of characterizing pulmonary inflammation in a mouse model** *MEDICAL PHYSICS*  
Rusu, M., Golden, T., Wang, H., Gow, A., Madabhushi, A.  
2015; 42 (8): 4822-4832

- **Prostatome: A combined anatomical and disease based MRI atlas of the prostate** *MEDICAL PHYSICS*  
Rusu, M., Bloch, B. N., Jaffe, C. C., Genega, E. M., Lenkinski, R. E., Rofsky, N. M., Feleppa, E., Madabhushi, A.  
2014; 41 (7)
- **Identifying Quantitative In Vivo Multi-Parametric MRI Features For Treatment Related Changes after Laser Interstitial Thermal Therapy of Prostate Cancer** *Neurocomputing*  
Viswanath, S., Toth, R., Rusu, M., Sperling, D., Madabhushi, A.  
2014; 144: 13-23
- **Anisotropic Smoothing Regularization (AnSR) in Thirion's Demons Registration Evaluates Brain MRI Tissue Changes Post-Laser Ablation** *IEEE Engineering in Medicine and Biology Sciences*  
Hwuang, E., Danish, S., Rusu, M., Sparks, R., Toth, R., Madabhushi, A.  
2013: 4006-4009
- **Automated tracing of filaments in 3D electron tomography reconstructions using Sculptor and Situs** *JOURNAL OF STRUCTURAL BIOLOGY*  
Rusu, M., Starosolski, Z., Wahle, M., Rigort, A., Wriggers, W.  
2012; 178 (2): 121-128
- **Evolutionary bidirectional expansion for the tracing of alpha helices in cryo-electron microscopy reconstructions** *JOURNAL OF STRUCTURAL BIOLOGY*  
Rusu, M., Wriggers, W.  
2012; 177 (2): 410-419
- **An assembly model of rift valley Fever virus.** *Frontiers in microbiology*  
Rusu, M., Bonneau, R., Holbrook, M. R., Watowich, S. J., Birmanns, S., Wriggers, W., Freiberg, A. N.  
2012; 3: 254-?
- **Developing a denoising filter for electron microscopy and tomography data in the cloud** *Biophysical Reviews*  
Starosolski, Z., Szczepanski, M., Wahle, M., Rusu, M., Wriggers, W.  
2012: 1-7
- **Evolutionary tabu search strategies for the simultaneous registration of multiple atomic structures in cryo-EM reconstructions** *JOURNAL OF STRUCTURAL BIOLOGY*  
Rusu, M., Birmanns, S.  
2010; 170 (1): 164-171
- **Using Sculptor and Situs for simultaneous assembly of atomic components into low-resolution shapes** *Journal of Structural Biology*  
Birmanns, S., Rusu, M., Wriggers, W., et al  
2010; 173: 428-435
- **Biomolecular pleiomorphism probed by spatial interpolation of coarse models** *BIOINFORMATICS*  
Rusu, M., Birmanns, S., Wriggers, W.  
2008; 24 (21): 2460-2466
- **VITA - An Interactive 3-D Visualization System to Enhance Student Understanding of Mathematical Concepts in Medical Decision-making** *IEEE Computer-Based Medical Systems*  
Iyengar, M., Svirebely, J., Rusu, M., Smith, J.  
2008
- **A mammalian microRNA expression atlas based on small RNA library sequencing** *CELL*  
Landgraf, P., Rusu, M., Sheridan, R., Sewer, A., Iovino, N., Aravin, A., Pfeffer, S., Rice, A., Kamphorst, A. O., Landthaler, M., Lin, C., Socci, N. D., Hermida, et al  
2007; 129 (7): 1401-1414