



Universiteit
Leiden
The Netherlands

Computer-aided techniques for assessment of MRI-detected inflammation for early identification of inflammatory arthritis

Aizenberg, E.

Citation

Aizenberg, E. (2019, March 14). *Computer-aided techniques for assessment of MRI-detected inflammation for early identification of inflammatory arthritis*. Retrieved from <https://hdl.handle.net/1887/68704>

Version: Not Applicable (or Unknown)

License: [Licence agreement concerning inclusion of doctoral thesis in the Institutional Repository of the University of Leiden](#)

Downloaded from: <https://hdl.handle.net/1887/68704>

Note: To cite this publication please use the final published version (if applicable).

Cover Page



Universiteit Leiden



The following handle holds various files of this Leiden University dissertation:

<http://hdl.handle.net/1887/68704>

Author: Aizenberg, E.

Title: Computer-aided techniques for assessment of MRI-detected inflammation for early identification of inflammatory arthritis

Issue Date: 2019-03-14

List of publications

E. Aizenberg, R. van den Berg, Z. Ez-Zaitouni, D. van der Heijde, M. Reijnierse, O. Dzyubachyk, B.P.F. Lelieveldt, “Computer-aided evaluation of inflammatory changes over time on MRI of the spine in patients with suspected axial spondyloarthritis: a feasibility study,” *BMC Medical Imaging*, 17:55, 2017.

E. Aizenberg, E.A.H. Roex, W.P. Nieuwenhuis, L. Mangnus, A.H.M. van der Helm-van Mil, M. Reijnierse, J.L. Bloem, B.P.F. Lelieveldt, B.C. Stoel, “Automatic quantification of bone marrow edema on MRI of the wrist in patients with early arthritis: a feasibility study,” *Magnetic Resonance in Medicine*, vol. 79(2), pp. 1127–1134, 2018.

E. Aizenberg^{*}, D.P. Shamonin^{*}, M. Reijnierse, A.H.M. van der Helm-van Mil, B.C. Stoel, “Automatic quantification of tenosynovitis on MRI of the wrist in patients with early arthritis: a feasibility study,” *European Radiology*, doi: 10.1007/s00330-018-5807-2, 2018.

^{*}Authors contributed equally.

E. Aizenberg^{*}, R.M. ten Brinck^{*}, M. Reijnierse, A.H.M. van der Helm-van Mil, B.C. Stoel, “Identifying MRI-detected inflammatory features specific for rheumatoid arthritis: two-fold feature reduction maintains predictive accuracy in clinically suspect arthralgia patients,” *Seminars in Arthritis and Rheumatism*, doi: 10.1016/j.semarthrit.2018.04.005, 2018.

^{*}Authors contributed equally.

Acknowledgements

The PhD journey is full of ups and downs, and like any journey in life, the people you share it with can make all the difference in the world on how you come out at its end. I am very fortunate with the people I got to share my journey with.

First of all, I would like to thank my supervisors, Boudewijn and Berend, for providing me with the opportunity to pursue my PhD at LKEB and their continuous support throughout the past four years. Berend, thank you for always being available for open-minded and frank discussions, for asking questions that encouraged me to think critically about my work, and for giving me the freedom to pursue this research creatively. I am also very thankful to you for volunteering your time and effort to translate the summary and discussion chapter into Dutch!

This research would not be possible without the awesome, insightful, and fruitful collaboration with my co-supervisors and PhD colleagues from the departments of Rheumatology and Radiology. Annette and Monique, thank you so much for your guidance, support, and advice, for shaping and paving this research together. To my fellow PhDs, Rosaline, Freek, Zineb, Wouter, Lukas, Robin, it was a pleasure to work together. Thank you so much for your time, your insights, and your openness. Rosaline and Robin, I got to spend a lot of time with each of you, and I am so grateful for your patience and willingness to explore together. I would also like to thank Prof. Désirée van der Heijde for helping shape the first chapter of this thesis and our numerous discussions leading up to its publication.

I could not have been more fortunate with the amazing fellow colleagues at LKEB who created a warm, welcoming, and engaging environment to work in every day. To my fellow Terminalzaal'ers, Baldur, Qian, Paulien, Ronald, Trung, Floris, Niels, Thomas, Qing, thank you for being the awesome office mates you are since

my first day at LKEB and throughout this whole journey. Baldur, thanks for sharing your knowledge and expanding my horizons during our many conversations, whether it was about programming, history, politics, or life. To Oleh, I am deeply grateful for your supervision during my first year at LKEB, your support and help during the PhD, and your warm friendship. Edgar, your work laid out important foundations for this research, and I am very thankful for the many productive and enlightening discussions we held. Denis, your vast knowledge and skills with programming were a life savior throughout these years, thank you so much for always willing to help out! I am happy we got to work a lot together and learn from each other during this project. To Leo, thanks for all the cool conversations we shared about many a curious topic and your sincerely welcoming attitude and support. Michèle, thank you so much for making it possible for us to have all the equipment we as PhDs need to do the job and always helping out to make sure it works smoothly. To all the great people of LKEB with whom I have been fortunate to share this journey together, thank you for making our team a diverse, creative, and most importantly warm and welcoming workplace for everyone.

Moving to another country is hard, for a whole bunch of reasons. But I have been lucky to meet other wandering kindred spirits, here in the Netherlands, who became dear friends. Giorgos, Nefeli, Yannis, Alexia, Roberta, Eleni, Ángela, Aleix, Emilija, thank you for your honest friendship, support, and all the fun moments we shared here in our life travels in the Low Lands.

Last but most certainly not least, I want to thank my family, my dear loved ones, for always being there for me no matter the distance between us, for believing in me, and for inspiring me to strive for something bigger than myself by being a citizen of this world.

Curriculum Vitae

Evgeni Aizenberg was born in Moscow, USSR, on June 28, 1990. In 2012, he received his B.Sc. degree in Electrical Engineering from Boston University, USA, where he worked as an undergraduate researcher at the Biomedical Optics Lab and conducted his bachelor thesis on automated detection of colon pre-cancer based on in vivo endomicroscopy images. In 2014, he received his M.Sc. degree in Electrical Engineering from Delft University of Technology, The Netherlands. His master thesis on computer-aided evaluation of inflammatory changes on MRI of the spine in patients with suspected axial spondyloarthritis was carried out at the Division of Image Processing (LKEB) at Leiden University Medical Center, The Netherlands, and the same year he joined LKEB as a PhD researcher. The goal of his PhD work was development of computer-aided techniques for assessment of MRI-detected inflammation for early identification of inflammatory arthritis. The results of his research are published in various scientific journals and are included in this thesis.

