LOTTA MARÍA ELLINGSEN PH.D.

University of Iceland, Dept. of Electrical & Comp. Eng.
VR-II, Hjardarhaga 2-6, 107 Reykjavik, Iceland
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Johns Hopkins University, Dept. of Electrical & Comp. Eng.
3400 N. Charles St., Baltimore, MD 21218, USA
lotta@jhu.edu

PROFESSIONAL EXPERIENCE

University of Iceland, Reykjavik, Iceland
Associate Professor, Department of Electrical and Computer Engineering **2017-**

Johns Hopkins University, Baltimore, USA
Adjunct Associate Professor, Department of Electrical and Computer Engineering **2020-**

Johns Hopkins University, Baltimore, USA
Assistant Research Professor, Department of Electrical and Computer Engineering **2016-2020**

University of Iceland, Reykjavik, Iceland
Assistant Professor, Department of Electrical and Computer Engineering **2014-2017**

Johns Hopkins University, Baltimore, USA
Visiting Assistant Professor, Department of Electrical and Computer Engineering **2014-2016**

Career Break
Stay-at-home mother **2010-2014**

Johns Hopkins University, Baltimore, USA
Postdoctoral Fellow, Image Analysis and Communications Lab **2009-2010**

Johns Hopkins University, Baltimore, USA
Research Assistant to Professor Jerry L. Prince **2002-2008**

deCODE Genetics Inc., Reykjavik, Iceland
Engineer – Signal Processing Group **2000-2002**

EDUCATION

Johns Hopkins University
Postdoctoral Fellow, Electrical and Computer Engineering **2009-2010**
Image Analysis and Communications Lab (IACL)
Advisor: Dr. Jerry L. Prince

Johns Hopkins University
Ph.D. Electrical and Computer Engineering **2008**
Dissertation: "Hybrid Deformable Image Registration – With Application to Brains, Pelvises, and Statistical Atlases"
Advisor: Dr. Jerry L. Prince

Johns Hopkins University
M.Sc. in Electrical and Computer Engineering **2004**

University of Iceland
B.Sc. in Electrical and Computer Engineering **2001**

HONORS AND AWARDS

University of Iceland's Science and innovation award **2020**
Teaching Award, School of Engineering and Natural Sciences, University of Iceland **2019**
Graduate Research Assistantship, IACL, Johns Hopkins University **2002-2007**
Department Tuition Fellowship, Dept. of Electrical and Computer Eng., Johns Hopkins University **2002-2007**
Fulbright Fellowship **2002-2007**
Student Award from Helga Jónsdóttir and Sigurliði Kristjánsson Memorial Fund **2006**
Thor Thors Fellowship from the American-Scandinavian Foundation **2002**

TEACHING EXPERIENCE

University of Iceland, Reykjavik, Iceland

Organizer and lecturer

Medical Imaging Systems, RAF613M/RAF507M **2014 –**
Engineering in Medicine RAF615M **2018 –**

Participating Lecturer

Introduction to Computer and Electric Engineering RAF101G **2017**

Supervision of Graduate Students (University of Iceland)

Magnús Magnússon, M.Sc. student in Electrical and Computer Engineering **2019-**
Hans Emil Atlason, Ph.D. student in Electrical and Computer Engineering **2017-**
Páll Ásgeir Björnsson, M.Sc. in Electrical and Computer Engineering **2020**
Thesis: "A Deep Learning Approach to Automatic Proximal Femur Segmentation from Computed Tomography Scans"
Benedikt Atli Jónsson, M.Sc. in Electrical and Computer Engineering (co-advisor) **2018**
Thesis: "Brain Age Prediction using Magnetic Resonance Imaging and Deep Learning"

Ph.D. thesis committee member

Róbert Arnar Karlsson, Electrical and Computer Engineering **2018-**
Behnood Rasti, Electrical and Computer Engineering **2010-2014**
Dissertation: "Wavelet-Based Restoration Techniques for Hyperspectral Images".

MS thesis committee member

Eyþór Einarsson, Electrical and Computer Engineering **2018-2020**
Thesis: "Autoencoder Based Normative Model for Structural Magnetic Resonance Image Analysis"

Johns Hopkins University, Baltimore, USA

Supervision of Graduate Students (Johns Hopkins University)

Joint supervision of D.Eng. student Aaron Carass with Professor Jerry Prince. **2020-**
Joint supervision of Ph.D. student Muhan Shao with Professor Jerry Prince. **2016-**
Joint supervision of Ph.D. student Sanjukta Nandi with Professor Jerry Prince. **2015 –2016**

Lecturer

Taught one week of the class 520.432/580.472 Medical Imaging Systems. **2016**

Teaching Assistant in Medical Imaging Systems. **2007**
Responsible for creating and grading weekly quizzes and created midterm and final exams. Prepared solutions to homework assignments and exams. Met with students in weekly office hours. Professor: Jerry L. Prince.

PUBLICATIONS

h-index 12 (Google Scholar)
https://scholar.google.com/citations?user=Px_2K0gAAAAJ&hl=en

1. P.A. Bjornsson, B. Helgason, H. Palsson, S. Sigurdsson, V. Gudnason, and **L.M. Ellingsen**, "Automated femur segmentation from computed tomography images using a deep neural network," *Accepted for publication in Proc. SPIE Medical Imaging 2021: Biomedical Applications in Molecular, Structural, and Functional Imaging,* February 2021.
2. M. Magnusson, A. Love, **L.M. Ellingsen**, "Automated brainstem parcellation using multi-atlas segmentation and deep neural network," *Accepted for publication in Proc. SPIE Medical Imaging 2021: Image Processing,* February 2021.
3. Hans E Atlason, Askell Love, Sigurdur Sigurdsson, Vilmundur Gudnason, and **Lotta M. Ellingsen,** "SegAE: Unsupervised white matter lesion segmentation from brain MRIs using a CNN autoencoder", *NeuroImage: Clinical*, vol 24, pp. 102085, doi.org/10.1016/j.nicl.2019.102085, 2019
4. BA Jonsson, G Bjornsdottir, TE Thorgeirsson, **LM Ellingsen**, G Bragi Walters, DF Gudbjartsson, H Stefansson, K Stefansson, MO Ulfarsson, "Brain age prediction using deep learning uncovers associated sequence variants", *Nature Communications,* 10, 5409 (2019) doi:10.1038/s41467-019-13163-9, 2019
5. Muhan Shao, Shuo Han, Aaron Carass, Xian Li, Ari M. Blitz, Jaehoon Shin, Jerry. L. Prince, and **Lotta. M. Ellingsen**, "Brain ventricle parcellation using a deep neural network: Application to patients with ventriculomegaly," *NeuroImage: Clinical*, vol. 23, pp. 101871, doi.org/10.1016/j.nicl.2019.101871, 2019.
6. Can Zhao, Muhan Shao, Aaron Carass, Hao Li, Blake E Dewey, **Lotta M. Ellingsen**, Jonghye Woo, Michael A Guttman, Ari M Blitz, Maureen Stone, Peter A Calabresi, Henry Halperin, Jerry L Prince, "Applications of a deep learning method for anti-aliasing and super-resolution in MRI", *Magnetic Resonance Imaging,* 2019, Doi: 10.1016/j.mri.2019.05.038, 2019.
7. Hans Atlason, Áskell Löve, Sigurður Sigurðsson, Vilmundur Guðnason, **Lotta M. Ellingsen**, "Unsupervised brain lesion segmentation from MRI using a convolutional autoencoder," *Proc. SPIE Medical Imaging 2019: Image Processing,* Vol. 10949, https://doi.org/10.1117/12.2512953, 2019.
8. Hans Atlason, Muhan Shao, Viðar Róbertsson, Sigurður Sigurðsson, Vilmundur Guðnason, Jerry L. Prince, **Lotta M. Ellingsen**, "Large-scale parcellation of the ventricular system using convolutional neural networks," *Proc. SPIE Medical Imaging 2019: Biomedical Applications in Molecular, Structural, and Functional Imaging*, Vol. 10953, https://doi.org/10.1117/12.2514590, 2019.
9. Muhan Shao, Shuo Han, Aaron Carass, Xiang Li, Ari M. Blitz, Jerry L. Prince, **Lotta M. Ellingsen**, "Shortcomings of Ventricle Segmentation Using Deep Convolutional Networks", *Understanding and Interpreting Machine Learning in Medical Image Computing Applications - First International Workshops MLCN 2018, DLF 2018, and iMIMIC 2018, Held in Conjunction with MICCAI 2018*, Proceedings (pp. 79-86). (Lecture Notes in Computer Science, Vol. 11038 LNCS). Springer Verlag. https://doi.org/10.1007/978-3-030-02628-8_9, 2018.
10. Muhan Shao, Aaron Carass, Xiang Li, Blake E. Dewey, Ari M. Blitz, Jerry L. Prince, **Lotta M. Ellingsen**, "Multi-atlas segmentation of the hydrocephalus brain using an adaptive ventricle atlas," *Proc. SPIE 10578, Medical Imaging 2018: Biomedical Applications in Molecular, Structural, and Functional Imaging*, 105780F (March 2018), https://doi.org/10.1117/12.2295613, 2018.
11. Jeffrey Glaister, Muhan Shao, Xiang Li, Aaron Carass, Snehashis Roy, Ari M. Blitz, Jerry L. Prince, **Lotta M. Ellingsen**, "Deformable model reconstruction of the subarachnoid space," *Proc. SPIE 10574, Medical Imaging 2018: Image Processing*, 1057431 (March 2018), https://doi.org/10.1117/12.2293633, 2018.
12. Aaron Carass, Muhan Shao, Xiang Li, Blake E. Dewey, Ari M. Blitz, Snehashis Roy, Dzung L. Pham, Jerry L. Prince and, **Lotta M. Ellingsen**. "Whole brain parcellation with pathology: Validation on ventriculomegaly patients."

In: Patch-Based Techniques in Medical Imaging: Third International Workshop, Patch-MI 2017, Held in Conjunction with MICCAI 2017. Springer International Publishing; p. 20-28, 2017.

13. Aaron Carass et al., "Longitudinal Multiple Sclerosis Lesion Segmentation Data Resource", *Data in Brief,* 12:346-350, 2017.
14. Magnus O. Ulfarsson et al., "15q11. 2 CNV affects cognitive, structural and functional correlates of dyslexia and dyscalculia", *Transl Psychiatry*, 7(4):e1109, 2017.
15. Aaron Carass et al., **"**Longitudinal Multiple Sclerosis Lesion Segmentation: Resource and Challenge**"**, *NeuroImage*, 148(C):77-102, 2017.
16. **Lotta M. Ellingsen**, Snehashis Roy, Aaron Carass, Ari M. Blitz, Dzung L. Pham, and Jerry L. Prince, "Developing automatic image processing methods for labeling the ventricular system in normal pressure hydrocephalus", *18th Conference on Research in Biomedical and Health Sciences,* Reykjavik, Iceland January 3-4, 2017.
17. **Lotta M. Ellingsen**, Snehashis Roy, Aaron Carass, Ari M. Blitz, Dzung L. Pham, Jerry L. Prince. "Segmentation and labeling of the ventricular system in normal pressure hydrocephalus using patch-based tissue classification and multi-atlas labeling." *2016 SPIE Conference on Medical Imaging*, San Diego, California, USA, 27. Feb.-3. March 2016.
18. Pierre-Louis Bazin, Navid Shiee**, Lotta M. Ellingsen**, Jerry L. Prince, Dzung L. Pham, "Digital Topology in Brain Image Segmentation and Registration", in *Multi Modality State-of-the-Art Medical Image Segmentation and Registration Methodologies*, Volume 1, Eds. Ayman S. El-Baz, Rajendra Acharya U, Majid Mirmehdi and Jasjit S. Suri, Ayman S. El-Baz, Rajendra Acharya U, Majid Mirmehdi and Jasjit S. Suri, pp 339-375, Springer, 2011.
19. **Lotta M. Ellingsen**, Gouthami Chintalapani, Russell H. Taylor, and Jerry L. Prince, "Robust Deformable Image Registration using Prior Shape Information for Atlas to Patient Registration", *Computerized Medical Imaging and Graphics*, vol. 34, pp 79-90, 2010.
20. **Lotta M. Ellingsen** and Jerry L. Prince, "Mjolnir: Extending HAMMER Using a Diffusion Transformation Model and Histogram Equalization for Deformable Image Registration", *International Journal of Biomedical Imaging*, vol. 2009, Article ID 281615, 2009.
21. Gouthami Chintalapani, Ofri Sadowsky, **Lotta M. Ellingsen**, Jerry L. Prince, and Russell H. Taylor, "Integrating statistical models of bone density into shape based 2D-3D registration framework", *The International Conference on Medical Image Computing and Computer-Assisted Intervention (MICCAI)* 2009 Workshop: Probabilistic Models for Medical Image Analysis, 151-161, London, UK, September, 2009.
22. Gouthami Chintalapani, **Lotta M. Ellingsen**, Ofri Sadowsky, Jerry L. Prince, and Russell H. Taylor, "Statistical Atlases of Bone Anatomy: Construction, Iterative Improvement and Validation", *the International Conference on Medical Image Computing and Computer-Assisted Intervention (MICCAI)*, Brisbane, Australia, November, 2007.
23. Pierre-Louis Bazin, **Lotta M. Ellingsen**, and Dzung L. Pham, "Digital Homeomorphisms in Deformable Registration", *Information Processing in Medical Imaging (IPMI)*, The Netherlands, 2-6 July, 2007.
24. **Lotta M. Ellingsen** and Jerry L. Prince, "Deformable Registration of CT Pelvis Images Using Mjolnir", in *Proceedings of the 7th Nordic Signal Processing Symposium*, Reykjavík, Iceland, 7.-9. June 2006.
25. **Lotta M. Ellingsen** and Jerry L. Prince, "Mjolnir: Deformable Image Registration using Feature Diffusion", in *Proceedings of the SPIE Medical Imaging Conference*, San Diego, California, USA, 11.-16. February 2006.
26. Ofri Sadowsky, Krishnakumar Ramamurthi, **Lotta M. Ellingsen**, Gouthami Chintalapani, Jerry L. Prince, and Russell H. Taylor, "Atlas-assisted Tomography: Registration of a Deformable Atlas to Compensate for Limited-angle Cone-beam Trajectory", in *Proceedings of the IEEE International Symposium on Biomedical Imaging (ISBI)*, Arlington, Virginia, USA, 6.-9. April 2006.

27. Hans T. Bjornsson, **Lotta M. Ellingsen**, and Jon J. Jonsson, "Transposon-derived Repeats in the Human Genome and 5-methylcytosine-associated Mutations in Adjacent Genes. *Gene*, January 2006.
28. Jóhann B. Fjalldal, Jakob Sigurðsson, Kjartan Benediktsson, and **Lotta M. Ellingsen**, "Automated Genotyping: Combining Neural Networks and Decision Trees to Perform Robust Allele Calling", *Proceedings of the IEEE International Joint Conference on Neural Networks (IJCNN01)*, Vol. Addendum, pp. A1-A6, 2001.

PRESENTATIONS

INVITED TALKS:

1. Automatic MR image segmentation of the 3D CSF structure in patients with NPH, *18th Symposium of the International Hydrocephalus Imaging Working Group,* held in conjunction with *the 11th Hydrocephalus Society Meeting,* Vancouver, Canada, September 13-16, 2019. **Invited speaker** (Invited by Ari Blitz).
2. MRI post-processing for NPH and other rare dementias, *The 2nd Nordic Memory Clinic Conference 2019,* Reykjavík, Iceland, August 30-31, 2019. **Invited speaker** (Invited by Jón Snædal).
3. NPH and rare dementias - The role of post-processing of MRI, *the Nordic Network in Dementia Diagnostics (NIDD) meeting*, Copenhagen, Denmark, November 1, 2018. **Invited speaker** (invited by Jón Snædal)
4. Automatic MR image segmentation of the CSF spaces in NPH, *2018 NIH Hydrocephalus Workshop: State-of-the-Science and Future Directions*, Baltimore, MD, USA, April 18-19, 2018. **Invited speaker** (invited by Jill Morris)**.**
5. Whole Brain Segmentation in the Presence of Ventriculomegaly - Application to Normal Pressure Hydrocephalus Patients, *Neuroengineering seminar*, University of Minnesota, Minneapolis, MN, USA, November 16, 2017. **Invited speaker** (invited by Bin He).
6. MedTech Opportunities in Iceland, *Symposium celebrating 35 years of a prosperous partnership: The University of Minnesota and the University of Iceland*. University of Iceland, Reykjavik, Iceland, May 29th, 2017. **Invited speaker** (invited by Hilmar B. Janusson).
7. Automatic Segmentation and Labeling of The Ventricular System in NPH**,** *13th Symposium of the International Hydrocephalus Imaging Working Group*, Long Beach, California, USA, April 27-28, 2017. **Invited speaker** (invited by Bryn A. Martin)**.**

CONFERENCE TALKS:

1. Automated femur segmentation from computed tomography images using a deep neural network, *SPIE Medical Imaging Conference 2021*, San Diego, California, USA, February 15-19, 2021. (Presented by MSc student Páll Ásgeir Björnsson).
2. Automated femur segmentation from computed tomography images using a deep neural network, *Nordic Baltic Conference on Biomedical Engineering and Medical Physics*, Reykjavik, Iceland, September 18-20, 2020. (Presented by MSc student Páll Ásgeir Björnsson, **2nd place for best student presentation**).
3. Automated brainstem parcellation from magnetic resonance imaging (MRI) for better understanding of rare dementia, *Nordic Baltic Conference on Biomedical Engineering and Medical Physics*, Reykjavik, Iceland, September 18-20, 2020. (Presented by MSc student Magnús Magnússon).
4. Unsupervised brain lesion segmentation from MRI using a convolutional autoencoder, *SPIE Medical Imaging Conference 2019*, San Diego, California, USA, February 16-21, 2019. (Presented by PhD student Hans E. Atlason).
5. Large-scale parcellation of the ventricular system using convolutional neural networks, *SPIE Medical Imaging Conference 2019*, San Diego, California, USA, February 16-21, 2019.

6. Automated segmentation of white matter lesions from brain MRI using a deep convolutional autoencoder, *19th Conference on Research in Biomedical and Health Sciences*, Reykjavik, Iceland January 3-4, 2019 (presented by PhD student Hans E. Atlason).
7. Multi-atlas segmentation of the hydrocephalus brain using an adaptive ventricle atlas, *SPIE Medical Imaging Conference*, Houston, Texas, USA, February 10-15, 2018. (presented by student Muhan Shao).
8. Whole brain parcellation with pathology: Validation on ventriculomegaly patients**,** *Patch-Based Techniques in Medical Imaging: Third International Workshop, Patch-MI 2017*, Held in Conjunction with MICCAI 2017, Quebec City, September 14, 2017.
9. Developing automatic image processing methods for labeling the ventricular system in normal pressure hydrocephalus**,** *18th Conference on Research in Biomedical and Health Sciences*, Reykjavik, Iceland January 3-4, 2017.
10. Developing Pipelines for Automatic Segmentation and Labeling of Human Brain Anatomy for Systematic Analysis of Brain Dysmorphology**,** Department of Electrical and Computer Engineering, Seminar, Johns Hopkins University, Baltimore, Maryland, USA, May 12, 2016.
11. Segmentation and labeling of the ventricular system in normal pressure hydrocephalus using patch-based tissue classification and multi-atlas labeling, *SPIE Medical Imaging Conference*, San Diego, California, USA, February 27 – March 3, 2016.
12. An optimized Image Analysis Pipeline for Pediatric Brain Dysmorphology, *IEEE Iceland Section and University of Iceland*, Reykjavik, Iceland, January 29, 2015.
13. Deformable Image Registration of Brain MRIs, Department of Electrical and Computer Engineering, Seminar, Johns Hopkins University, Baltimore, Maryland, USA, December 7, 2006.
14. Deformable Registration of CT Pelvis Images Using Mjolnir, *7th Nordic Signal Processing Symposium*, Reykjavík, Iceland, June 7-9, 2006.
15. Mjolnir: Deformable Image Registration using Feature Diffusion, *Engineering Research Center for Computer-Integrated Surgical Systems and Technology*, Seminar, Johns Hopkins University, Baltimore, Maryland, USA, April 12, 2006.
16. Mjolnir: Deformable Image Registration using Feature Diffusion, *SPIE Medical Imaging Conference*, San Diego, California, USA, February 11-16, 2006.

POSTERS:

1. Magnus Magnusson, Askell Love, **Lotta M. Ellingsen**, "Automated brainstem parcellation using multi-atlas segmentation and deep neural network," *SPIE Medical Imaging Conference 2021,* San Diego, California, USA, February 15-19, 2021.
2. Magnús Magnússon, Áskell Löve, **Lotta M. Ellingsen**, "Automated Brainstem Parcellation from Magnetic Resonance Imaging (MRI) for Better Understanding of Rare Dementia", *4th Innovation in Health Sciences conference*, University of Iceland, Reykjavik, Iceland, November 15, 2019.
3. Hans Atlason, Áskell Löve, Sigurður Sigurðsson, Vilmundur Guðnason, **Lotta M. Ellingsen**, "Brain Tissue and Lesion Segmentation from MRI using Unsupervised Convolutional Autoencoder," *Organization for Human Brain Mapping (OHBM) 2019*, Rome, Italy, June 9-13, 2019.
4. Jeffrey Glaister, Muhan Shao, Xiang Li, Aaron Carass, Snehashis Roy, Ari M. Blitz, Jerry L. Prince, **Lotta M. Ellingsen**, "Deformable model reconstruction of the subarachnoid space," *SPIE Medical Imaging Conference*, Houston, Texas, USA, February 10-15, 2018.
5. Aaron Carass, Muhan Shao, Xiang Li, Jaehoon Shin, Snehashis Roy, Jerry L. Prince, Ari M. Blitz, **Lotta M. Ellingsen**, "Validating automated parcellation of the sub-compartments of the ventricular system in

normal pressure hydrocephalus patients". *The Ninth Meeting of the International Society for Hydrocephalus and Cerebrospinal Fluid Disorders*, Kobe, Japan, September 23-25, 2017.

6. Jeff Glaister, Muhan Shao, Aaron Carass, Xiang Li, Jaehoon Shin, Snehashis Roy, Jerry L. Prince, Ari M. Blitz, and **Lotta M. Ellingsen**. "Identifying and parcellating the subarachnoid space". *The Ninth Meeting of the International Society for Hydrocephalus and Cerebrospinal Fluid Disorders*, Kobe, Japan, September 23-25, 2017.

RELATED PROFESSIONAL EXPERIENCE

Institutional Administrative Appointments

Department Vice-Chair, Electrical and Computer Engineering, University of Iceland	**2018-**
Science Council member, University of Iceland	**2017-2020**
Science Committee, School of Engineering and Natural Sciences, University of Iceland	**2016-**
Professional Committee for the Continuing Education Centre at the University of Iceland	**2017-**
Expert Panel member for the Infrastructure Fund, The Icelandic Centre for Research (Rannís)	**2019**
Equal Rights Committee, School of Engineering and Natural Sciences, University of Iceland	**2016-2017**
Self-review Committee, Department of Electrical- and Computer Engineering, Univ. of Iceland	**2015,2019**

Developer and director of a study program in Medical Engineering in the Department of ECE **2014 -**

Organized and developed curriculum for a new study program in medical engineering for undergraduate students in the Department of electrical and computer engineering at the University of Iceland. The program was launched in the fall of 2015 and focuses on bridging electrical engineering and medicine. Engineering students are introduced to practical solutions of medical problems using engineering techniques and are required to take both fundamental courses in electrical- and computer engineering and mathematics as well as courses in medical imaging, genetics, and physiology.

Editorial Board

Review Editor, Brain Imaging Methods, Frontiers in Neuroscience	**2020**

Program Committee Member

SPIE Medical Imaging - Image Processing Program Committee Member	**2020-2021**
Nordic-Baltic Conference on Biomedical Engineering and Medical Physics	**2020**

Organizing Committee Member

Nordic-Baltic Conference on Biomedical Engineering and Medical Physics, Co-chair	**2020**
International Symposium on Biomedical Imaging (ISBI 2015)	
- The Longitudinal Multiple Sclerosis Lesion Segmentation Challenge	**2015**

Reviewer (Grants, journal papers, and conference papers)

IEEE Transactions on Medical Imaging (2015-2020); NeuroImage:Clinical (2020), SPIE Medical Imaging – Image Processing (2020), Computer Methods and Programs in Biomedicine (2019-2020); University of Iceland Research Fund (2017-2020), Nordic-Baltic Conference on Biomedical Engineering and Medical Physics (2020); RANNÍS Infrastructure Fund (2019), Artificial Intelligence in Medicine (2018-2019); Eimskip-University Research Fund (2017); Scientific Reports – Nature Publishing Group (2016); PLOS ONE (2016); IEEE Transactions on Circuits and Systems for Video Technology (2016); The Cairo International Biomedical Engineering Conference (2016); International Journal of Computer Vision (2010); Medical Image Computing and Computer-Assisted Intervention (MICCAI, 2007).

RESEARCH SUPPORT

Ongoing (PI: L.M. Ellingsen) 02/01/21-01/31/24 RANNIS (The Icelandic Research Fund) **2021-2024**
Identifying Brain Imaging Biomarkers for Early Diagnosis of Parkinson-Plus Syndromes
Develop a novel brain segmentation pipeline focused on identifying imaging markers for Parkinson-plus syndromes. The method will compute quantitative imaging measures to better characterize the brainstem atrophy seen in this patient group for early detection of these diseases. Role: Principal Investigator.

Ongoing (PI: L.M. Ellingsen) 02/01/17-01/31/20 RANNIS (The Icelandic Research Fund) **2017-2020**
Using image processing for evaluation of the ventricular system in health and disease
Develop and compute novel quantitative imaging measures to better characterize the ventricular system to explore a novel classification of subjects with ventriculomegaly into subgroups and explore whether diagnosed NPH patients show preferential clustering in one of these groups. Role: Principal Investigator.

Ongoing (PI: L.M. Ellingsen) 02/01/19 – 01/31/22 University of Iceland Research Fund
Characterizing Dementia from MRI using Image Processing **2019-2022**
Develop automated image processing methods for brain MRI to elucidate imaging markers for rare dementias.

Recently completed (PI: L.M. Ellingsen, Student: M. Magnússon) 06/01/20-08/31/20 RANNIS (Student Innovation Fund) **Developing a deep neural network for automated, real time volumetric measurements of the brainstem sub-structures from magnetic resonance images** **2020**

*Recently completed (*PI: L.M. Ellingsen, Student: P.Á. Björnsson) 06/01/20-08/31/20 RANNIS (Student Innovation Fund) **Developing a deep neural network for automated femur segmentation from computed tomography (CT) scans** **2020**

Recently completed (PI: L.M. Ellingsen, Student: Á. Friðriksdóttir) 06/01/20-08/31/20 RANNIS (Student Innovation Fund) **GenePrint: Diagnosis of genetic disorders with a fingerprint app** **2020**

Completed (PI: L.M. Ellingsen, Student: M. Magnússon) 06/19-08/19 RANNIS (Student Innovation Fund) **Automated brainstem parcellation from MRI for better understanding of rare dementia** **2019**

Completed 1R21NS096497 (PI: J.L. Prince) NIH/NINDS
Ventricle segmentation and labeling to characterize normal pressure hydrocephalus **2016-2018**
To develop new image processing methods to help physicians better diagnose whether shunt surgery is likely to alleviate the cognitive and motor difficulties that often accompany the condition of normal pressure hydrocephalus. Role: Responsible for the development and evaluation of the new segmentation and labeling algorithm and the retrospective pilot study on NPH patients, and supervising both undergraduate and graduate students.

Completed (PI: L.M. Ellingsen) 02/01/17 – 01/31/18 University of Iceland Research Fund
Characterizing the ventricular system in health and disease **2017-2018**
Explore a novel classification of subjects with enlarged ventricles into subgroups. Role: Principal Investigator.

Completed (PI: L.M. Ellingsen) 02/01/15 – 01/31/16 University of Iceland Research Fund
An Image Analysis Pipeline for Pediatric Brain Dysmorphology **2015-2016**
To develop an accurate and robust image analysis pipeline for automatic segmentation and labeling of pediatric brain MRI for systematic analysis of brain dysmorphology. Role: Principal Investigator.

MEMBERSHIPS

Institute of Electrical and Electronics Engineers (IEEE), Member.
International Society for Optical Engineering (SPIE), Member.
International Society for Hydrocephalus and Cerebrospinal Fluid Disorders (ISHCSF), Member.