Björn Sigurðsson

PERSONAL INFORMATION

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PROFILE

I am a programmer and neuroscientist with 5 years of experience analyzing pre-clinical brain images. I have mainly worked with data from MR, CT, and SPECT scanners to investigate the flow of water in the brain and its role in clearing away neuronal waste products. Moving forward in my career, I want to work on clinically relevant research involving machine learning and personalized therapy.

EDUCATION

University of Copenhagen *, Ph.D., Neuroscience*   **2019 - 2023**

My Ph.D. project is to implement and apply novel imaging techniques to study the glymphatic system. I use dynamic, quantitative, imaging methods to investigate the flow of cerebrospinal fluid in the brain of rodents and pigs. I infuse contrast agent or radio labeled tracers into the cisterna magna of anesthetized animal models to see how brain state affects the clearance of neuronal waste products. I use most of my time to analyze the data I acquire, for example, to calculate the flow speed along peri-vascular spaces or measure the rate of tracer distribution in brain tissue.

University of Copenhagen *, M.S., Computer Science*   **2015 - 2017**

I studied machine learning and image analysis. My thesis supervisor was Sune Darkner and we developed a convolutional neural network to segment the brain in rodent MRI using only a few labeled images to train on. I presented my results at a poster session at ISMRM 2018.

University of Iceland *, B.Sc., Computer Science*   **2012 - 2015**

I studied theoretical computer science with emphasis on algorithms, data structures, and programming language theory.

WORK EXPERIENCE

Danish Research center for Magnetic Resonance *, Postdoc*   **2023 - Present**

I am currently employed as a Postdoc at DRCMR. I mainly work with deep learning and non-invasive brain stimulation.

Center for Translational Neuromedicine *, Research Assistant*   **2017 - 2019**

I was a research assistant at the Center for Translational Neuromedicine, University of Copenhagen. I analysed MR/CT/SPECT images of rodent brains and automated data processing tasks such as motion correction and bias-field correction. I was actively involved in designing experiments, processing data, and visualizing results that were published in scientific journals.

Tibalo *, Back-end developer*   **2016 - 2017**

I worked on a math education system for high-school teachers and students called Abacus. I wrote data-base forms and queries in PHP and SQL.

University of Iceland *, Teacher's assistant*   **2014 - 2015**

I was a teacher's assistant in several courses during my bachelor's degree and was responsi-

ble for programming work-shops and grading assignments.

TECHNICAL
SKILLS

Equipment and licenses: I have training and experience in operating a Bruker 9.4T small animal MR scanner and a MiLabs VECTor/CT PET/SPECT/CT scanner. I have the Felasa ABD license for conducting animal experiments.
Selected Python packages: Numpy, Scipy, Pandas, Statsmodels, Nipype, Nibabel, Nilearn
Machine learning frameworks: Tensorflow, Keras, scikit-learn, DeepLabCut, CaImAn
Analysis software: Itk-snap, Fiji, MRIcroGL, Prism, ANTs, Excel, JupyterLab