

Accepted Manuscript

Deep Learning in Mammography and Breast Histology, an Overview and Future Trends

Azam Hamidinekoo, Erika Denton, Andrik Rampun, Kate Honnor, Reyer Zwiggelaar

PII: S1361-8415(18)30090-2
DOI: [10.1016/j.media.2018.03.006](https://doi.org/10.1016/j.media.2018.03.006)
Reference: MEDIMA 1351



To appear in: *Medical Image Analysis*

Received date: 26 July 2017
Revised date: 3 January 2018
Accepted date: 14 March 2018

Please cite this article as: Azam Hamidinekoo, Erika Denton, Andrik Rampun, Kate Honnor, Reyer Zwiggelaar, Deep Learning in Mammography and Breast Histology, an Overview and Future Trends, *Medical Image Analysis* (2018), doi: [10.1016/j.media.2018.03.006](https://doi.org/10.1016/j.media.2018.03.006)

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

Deep Learning in Mammography and Breast Histology, an Overview and Future Trends

Azam Hamidinekoo^{a,*}, Erika Denton^b, Andrik Rampun^c, Kate Honnor^d, Reyer
Zwiggelaar^a

^a*Department of Computer Science, Aberystwyth University, United Kingdom*

^b*Department of Radiology, Norfolk and Norwich University Hospital, United Kingdom*

^c*School of Computing, Ulster University, Coleraine, Northern Ireland, United Kingdom*

^d*Department of Histopathology/Cytopathology, Norfolk and Norwich University Hospital,
United Kingdom*

Abstract

Recent improvements in biomedical image analysis using deep learning based neural networks could be exploited to enhance the performance of Computer Aided Diagnosis (CAD) systems. Considering the importance of breast cancer worldwide and the promising results reported by deep learning based methods in breast imaging, an overview of the recent state-of-the-art deep learning based CAD systems developed for mammography and breast histopathology images is presented. In this study, the relationship between mammography and histopathology phenotypes is described, which takes biological aspects into account. We propose a computer based breast cancer modelling approach: the Mammography-Histology-Phenotype-Linking-Model, which develops a mapping of features/phenotypes between mammographic abnormalities and their histopathological representation. Challenges are discussed along with the potential contribution of such a system to clinical decision making and treatment management.

Keywords: Mammography, Breast Histopathology, Computer Aided
Diagnosis, Deep Learning

*Corresponding author; Department of Computer Science, Aberystwyth University, UK
Email addresses: azh2@aber.ac.uk (Azam Hamidinekoo), erika.denton@nnuh.nhs.uk
(Erika Denton), y.rampun@ulster.ac.uk (Andrik Rampun), kate.honnor@nnuh.nhs.uk
(Kate Honnor), rrz@aber.ac.uk (Reyer Zwiggelaar)

Download English Version:

<https://daneshyari.com/en/article/6877879>

Download Persian Version:

<https://daneshyari.com/article/6877879>

[Daneshyari.com](https://daneshyari.com)