

## Accepted Manuscript

Title: Use of transfer learning to detect diffuse degenerative hepatic diseases from ultrasound images in dogs: A methodological study

Authors: T. Banzato, F. Bonsembiante, L. Aresu, M.E. Gelain, S. Burti, A. Zotti



PII: S1090-0233(17)30269-1  
DOI: <https://doi.org/10.1016/j.tvjl.2017.12.026>  
Reference: YTVJL 5099

To appear in:

Accepted date: 31-12-2017

Please cite this article as: T.Banzato, F.Bonsembiante, L.Aresu, M.E.Gelain, S.Burti, A.Zotti, Use of transfer learning to detect diffuse degenerative hepatic diseases from ultrasound images in dogs: A methodological study (2010), <https://doi.org/10.1016/j.tvjl.2017.12.026>

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.

## Original Article

### Use of transfer learning to detect diffuse degenerative hepatic diseases from ultrasound images in dogs: A methodological study

T. Banzato <sup>a</sup>, F. Bonsembiante <sup>b</sup>, L. Aresu <sup>b</sup>, M.E. Gelain <sup>b</sup>, S. Burti <sup>a</sup>, A. Zotti <sup>a,\*</sup>

<sup>a</sup> *Department of Animal Medicine, Production and Health, University of Padua, Viale dell'Università 16, 35020 Legnaro, Padua, Italy*

<sup>b</sup> *Department of Comparative Biomedicine and Food Science, University of Padua, Viale dell'Università 16, 35020 Legnaro, Padua, Italy*

\* Corresponding author. Tel.: +39 498272509. Email address: [alessandro.zotti@unipd.it](mailto:alessandro.zotti@unipd.it) (A. Zotti).

## Highlights

- A deep convolutional neural network (DNN) to detect liver degeneration was developed using a transfer learning methodology.
- The diagnostic accuracy of the DNN was compared to that of alanine transaminase, aspartate transaminase and of cytology.
- A binary classification of the samples was used (non-degenerative versus degenerative).
- The developed DNN displayed a moderate diagnostic accuracy in the detection of liver degeneration.
- The developed DNN outperformed all other non-invasive tests that displayed a very low diagnostic accuracy.

## Abstract

The aim of this methodological study was to develop a deep convolutional neural network (DNN) to detect degenerative hepatic disease from ultrasound images of the liver in dogs and to compare the diagnostic accuracy of the newly developed DNN with that of serum biochemistry and cytology on the same samples, using histopathology as a standard. Dogs with suspected hepatic disease that had no prior history of neoplastic disease, no hepatic nodular pathology, no ascites and ultrasonography performed 24 h prior to death were included in the

Download English Version:

<https://daneshyari.com/en/article/8504914>

Download Persian Version:

<https://daneshyari.com/article/8504914>

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