



**HAL**  
open science

# Early Diagnosis of Lyme Disease by Recognizing Erythema Migrans Skin Lesion from Images Utilizing Deep Learning Techniques

Sk Imran Hossain, Engelbert Mephu Nguifo, Jocelyn de Goër de Herve

► **To cite this version:**

Sk Imran Hossain, Engelbert Mephu Nguifo, Jocelyn de Goër de Herve. Early Diagnosis of Lyme Disease by Recognizing Erythema Migrans Skin Lesion from Images Utilizing Deep Learning Techniques. Deep learning with weak or few labels in medical image analysis, GDR ISIS, Feb 2022, Villejuif, France. hal-04086554

**HAL Id: hal-04086554**

**<https://hal.inrae.fr/hal-04086554v1>**

Submitted on 2 May 2023

**HAL** is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.

Sk Imran Hossain, Engelbert Mephu Nguifo, Jocelyn de Goër de Herve, “Early diagnosis of Lyme disease by recognizing Erythema Migrans skin lesion from images utilizing deep learning techniques,” GDR ISIS meeting on Deep learning with weak or few labels in medical image analysis, CNRS, Villejuif, France, 01/02/2022. (<https://www.gdr-isis.fr/index.php/reunion/468/>)

## **Early diagnosis of Lyme disease by recognizing Erythema Migrans skin lesion from images utilizing deep learning techniques**

**Sk Imran Hossain** (1), Engelbert Mephu Nguifo (1), Jocelyn de Goër de Herve (2)  
(1) Université Clermont Auvergne, CNRS, ENSMSE, LIMOS, F-63000 Clermont-Ferrand, France, (2) Université Clermont Auvergne, INRAE, VetAgro Sup, UMR EPIA, 63122 Saint-Genès-Champanelle, France

Lyme disease is one of the most common infectious vector-borne diseases in the world. We extensively studied the effectiveness of convolutional neural networks for identifying Lyme disease from images. Our research plan includes multimodal learning incorporating expert opinion elicitation, automation of skin hair mask generation and improving neural architecture search.

This research was funded by the European Regional Development Fund, project DAPPEM–AV0021029.