

INVITATION

We would like to invite you to the lecture

DeepLeish: Deep Learning–Based Image Pattern Recognition for Automated Detection of Leishmaniasis Parasites in Microscopic Images

By

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Annotation: Deep learning models have significantly advanced high-speed feature extraction and object detection in medical diagnostics. This presentation, outlines foundational work on 'DeepLeish', a decision-support system for the automatic detection of Leishmania parasites from Giemsa-stained microscopic images. The framework employs YOLO (You Only Look Once) architectures to enable rapid and automated detection of Leishmania parasites in microscopic images. The study was motivated by the limitations of conventional microscopic diagnosis, which can be time-consuming, subjective, and dependent on experienced laboratory professionals. The aim was to investigate whether deep learning based image pattern recognition could support faster and more consistent parasite detection. The research involved preparation and analysis of microscopic image datasets containing leishmaniasis parasites, negative backgrounds, and monocyte cells. Image preprocessing and augmentation techniques, including image rotation and Gaussian filtering, were applied to improve data variability and model generalization. Three deep-learning object-detection models YOLOv5, Faster R-CNN, and SSD ResNet50 FPN were trained, fine-tuned, and compared using performance measures such as mean average precision, recall, and intersection over union. Through this research, I gained practical experience in medical image processing, datasets preparation and annotation, image augmentation, deep-learning model training and fine-tuning, object detection, model performance evaluation. The work strengthened my interest in AI-based image pattern recognition for healthcare applications.

Date: Tuesday 3 November 2026

Time: 10:00

Venue: University of West Bohemia in Pilsen
New Technologies – Research Centre
Teslova 5b, Plzeň, room TC211