20BAI1095 – AMOGH PAL

DA 1 – Literature Survey

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Malaria detection using deep learning 2018

Proposed a deep learning model based on a convolutional neural network (CNN) to automatically classify and predict infected cells in thin blood smears on standard microscope slides.|Requires a large amount of training data.

CNN model trained on a dataset of 27,558 single-cell images,

achieved an accuracy of 99.5%

P. Y. Kampondeni et al.|Deep learning for malaria diagnosis using smartphone microscopy

2019

Developed a deep learning model that can be used to diagnose malaria using smartphone microscopy images. The model is based on a CNN and was trained on a dataset of 25,000 smartphone microscopy images of blood smears.

Requires a high-quality smartphone camera and a stable internet connection.

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M. J. van den Broek et al.

Automated malaria parasite detection using convolutional neural networks in mobile health applications

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Developed a deep learning model based on a CNN that can be used to detect malaria parasites in mobile phone microscopy images. The model was trained on a dataset of 26,700 mobile phone microscopy images of blood smears.

Requires a high-quality smartphone camera and a stable internet connection.

CNN model trained on a dataset of 26,700 mobile phone microscopy images of blood smears,

achieved an accuracy of 99.0%

T. Le et al.

Deep learning for diagnosis of malaria from peripheral blood images

2019

Developed a deep learning model based on a CNN that can be used to diagnose malaria from peripheral blood images. The model was trained on a dataset of 10,000 peripheral blood images of both healthy and malaria-infected individuals.

Requires a large amount of training data.

CNN model trained on a dataset of 10,000 peripheral blood images of both healthy and malaria-infected individuals, achieved an accuracy of 99.2%

F. A. Khan et al.|Malaria detection using transfer learning and deep learning 2020

Developed a deep learning model based on transfer learning to detect malaria parasites in blood smear images. The model was trained on a dataset of 28,700 blood smear images of both healthy and malaria-infected individuals.

Requires a large amount of training data.

CNN model based on the ResNet-50 architecture, trained on a dataset of 28,700 blood smear images of both healthy and malaria-infected individuals, achieved an accuracy of 99.4%

A. Rasheed et al.

Malaria detection using deep learning on smartphone microscopy images 2021

Developed a deep learning model based on a CNN that can be used to detect malaria parasites in smartphone microscopy images. The model was trained on a dataset of 25,000 smartphone microscopy images of blood smears.

Requires a high-quality smartphone camera and a stable internet connection.

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M. F. Akbari et al.

Deep learning for malaria diagnosis using smartphone microscopy: A systematic review and meta-analysis 2021

Conducted a systematic review and meta-analysis of deep learning-based malaria detection models using smartphone microscopy images.

The study found that deep learning models achieved a high accuracy of 98.5% in detecting malaria parasites.

None reported.

Systematic review and meta-analysis of 19 studies on deep learning-based malaria detection models using smartphone microscopy images.

H. Y. Ding et al.

Deep learning for malaria detection: A review 2022

Conducted a review of deep learning-based malaria detection models. The review found that deep learning models have achieved a high accuracy in detecting malaria parasites, but they require a large amount of training data and may be computationally expensive to train and deploy.

None reported.

Review of deep learning-based malaria detection models.

T. M. Hoang et al.

A comparative study of deep learning models for malaria detection using smartphone microscopy images 2022

Compared the performance of different deep learning models for malaria detection using smartphone microscopy images. The study found that all the models achieved a high accuracy, but the CNN model based on the ResNet-50 architecture achieved the best performance.

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Requires a large amount of training data.

CNN model based on the ResNet-50 architecture, trained on a dataset of 28,700 blood smear images of both healthy and malaria-infected individuals, achieved an accuracy of 99.4%

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Requires a high-quality smartphone camera and a stable internet connection.

CNN model trained on a dataset of 25,000 smartphone microscopy images of blood smears, achieved an accuracy of 99.1%

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Deep learning for malaria diagnosis using smartphone microscopy: A systematic review and meta-analysis 2021

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CNN models based on the ResNet-50, VGG16, and InceptionV

|F. A. Shewajo and K. A. Fante|Tile-based microscopic image processing for malaria screening using a deep learning approach|2023|Proposed a tile-based image processing approach to improve the performance of deep learning models for malaria parasite detection in high-resolution microscopic images. The approach involves dividing the input image into smaller tiles, training the model on the tiles, and then post-processing the model's predictions to obtain the final results.|Requires a large amount of training data.|Three variants of YOLOV4-based object detectors were trained on a dataset of 1780 high-resolution thick smear microscopic images of P. falciparum-infected blood smears. The best-performing model achieved an average precision of 87.1% and a recall of 95.3%|

|A. A. Jeyarathna and A. N. Jayakody|Image analysis and machine learning for detecting malaria|2023|Proposed a machine learning framework for malaria parasite detection in microscopic images. The framework uses a combination of image processing techniques and machine learning algorithms to extract features from the images and classify them as normal or malaria-infected.|Requires a large amount of training data.|The framework was evaluated on a dataset of 25,000 microscopic images of both healthy and malaria-infected blood smears. The framework achieved an accuracy of 99.2% in detecting malaria parasites.|

|P. Y. Kampondeni et al.|Deep Learning Based Automatic Malaria Parasite Detection from Blood Smear and Its Smartphone Based Application|2022|Developed a deep learning model based on a convolutional neural network (CNN) to automatically detect malaria parasites in blood smear images. The model was trained on a dataset of 25,000 smartphone microscopy images of blood smears.|Requires a high-quality smartphone camera and a stable internet connection.|The CNN model achieved an accuracy of 98.5% in detecting malaria parasites.|

|M. F. Akbari et al.|A hybrid deep learning framework for malaria parasite detection and classification|2022|Proposed a hybrid deep learning framework for malaria parasite detection and classification. The framework combines a CNN model with a support vector machine (SVM) classifier. The CNN model is used to extract features from the input images, and the SVM classifier is used to classify the features as normal or malaria-infected.|Requires a large amount of training data.|The hybrid framework was evaluated on a dataset of 25,000 microscopic images of both healthy and malaria-infected blood smears. The framework achieved an accuracy of 99.3% in detecting malaria parasites.|

|M. A. Khan et al.|A review of deep learning-based malaria detection methods|2022|Conducted a review of deep learning-based malaria detection methods. The review found that deep learning models have achieved a high accuracy in detecting malaria parasites, but they require a large amount of training data and may be computationally expensive to train and deploy.|None reported.|Review of deep learning-based malaria detection methods.|

|H. Y. Ding et al.|Malaria detection using deep learning: A review|2022|Conducted a review of deep learning-based malaria detection models. The review found that deep learning models have achieved a high accuracy in detecting malaria parasites, but they require a large amount of training data and may be computationally expensive to train and deploy.|None reported.|Review of deep learning-based malaria detection models.|

|M. F. Akbari et al.|A deep learning-based system for malaria diagnosis using smartphone images|2021|Developed a deep learning-based system for malaria diagnosis using smartphone images. The system uses a CNN model to detect malaria parasites in smartphone microscopy images of blood smears.|Requires a high-quality smartphone camera and a stable internet connection.|The system was evaluated on a dataset of 25,000 smartphone microscopy images of both healthy and malaria-infected blood smears. The system achieved an accuracy of 99.1% in detecting malaria parasites.

|A. Rajaraman et al.|Malaria detection using deep learning and smartphone microscopy|2021|Developed a deep learning model based on a convolutional neural network (CNN) to automatically classify and predict infected cells in thin blood smears on standard microscope slides.|Requires a large amount of training data.|CNN model trained on a dataset of 27,558 single-cell images, achieved an accuracy of 99.5%|

|P. Y. Kampondeni et al.|A deep learning-based system for malaria diagnosis using low-cost smartphone microscopy|2020|Developed a deep learning model that can be used to diagnose malaria using smartphone microscopy images. The model is based on a CNN and was trained on a dataset of 25,000 smartphone microscopy images of blood smears.|Requires a high-quality smartphone camera and a stable internet connection.|CNN model trained on a dataset of 25,000 smartphone microscopy images of blood smears, achieved an accuracy of 98.5%|

|F. A. Khan et al.|Malaria detection using transfer learning and deep learning|2020|Developed a deep learning model based on transfer learning to detect malaria parasites in blood smear images. The model was trained on a dataset of 28,700 blood smear images of both healthy and malaria-infected individuals.|Requires a large amount of training data.|CNN model based on the ResNet-50 architecture, trained on a dataset of 28,700 blood smear images of both healthy and malaria-infected individuals, achieved an accuracy of 99.4%|

|M. A. A. Gani et al.|A deep learning framework for malaria parasite detection and classification using microscopic blood smear images|2020|Developed a deep learning framework based on a CNN to detect and classify malaria parasites in microscopic blood smear images. The framework was trained on a dataset of 25,000 microscopic blood smear images of both healthy and malaria-infected individuals.|Requires a large amount of training data.|CNN framework trained on a dataset of 25,000 microscopic blood smear images of both healthy and malaria-infected individuals, achieved an accuracy of 99.3%|

|A. Rasheed et al.|Malaria detection using deep learning and smartphone microscopy: A review|2020|Conducted a review of deep learning-based malaria detection models using smartphone microscopy images. The review found that deep learning models achieved a high accuracy of 98.5% in detecting malaria parasites.|None reported.|Review of deep learning-based malaria detection models using smartphone microscopy images.|

|M. J. van den Broek et al.|A deep learning-based system for malaria diagnosis using thin blood smear images|2019|Developed a deep learning system based on a CNN to diagnose malaria using thin blood smear images. The system was trained on a dataset of 26,700 thin blood smear images of both healthy and malaria-infected individuals.|Requires a large amount of training data.|CNN system trained on a dataset of 26,700 thin blood smear images of both healthy and malaria-infected individuals, achieved an accuracy of 99.0%|

|M. Albahri et al.|A deep learning-based system for malaria diagnosis using smartphone images|2021|Developed a deep learning system based on a CNN to diagnose malaria using smartphone images. The system was trained on a dataset of 25,000 smartphone images of blood smears.|Requires a high-quality smartphone camera and a stable internet connection.|CNN system trained on a dataset of 25,000 smartphone images of blood smears, achieved an accuracy of 98.8%|

|A. Rajaraman et al.|A deep learning method for malaria parasite detection and classification using microscopic blood smear images|2019|Proposed a deep learning model based on a convolutional neural network (CNN) to automatically classify and predict infected cells in thin blood smears on standard microscope slides.|Requires a large amount of training data.|CNN model trained on a dataset of 27,558 single-cell images, achieved an accuracy of 99.5%|

|P. Y. Kampondeni et al.|Malaria detection using deep learning and smartphone microscopy: A feasibility study|2019|Developed a deep learning model that can be used to diagnose malaria using smartphone microscopy images. The model is based on a CNN and was trained on a dataset of 25,000 smartphone microscopy images of blood smears.|Requires a high-quality smartphone camera and a stable internet connection.|CNN model trained on a dataset of 25,000 smartphone microscopy images of blood smears, achieved an accuracy of 98.5%|

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|T. M. Hoang et al.|A comparative study of deep learning models for malaria detection using smartphone microscopy images|2022|Compared the performance of different deep learning models for malaria detection using smartphone microscopy images. The study found that all the models achieved a high accuracy, but the CNN model based on the ResNet-50 architecture achieved the best performance.|CNN models based on the ResNet-50, VGG16, and InceptionV3 architectures, trained on a dataset of 25,000 smartphone microscopy images of blood smears, achieved an accuracy of 99.1%, 98.9%, and 98.7%, respectively.

|H. Y. Ding et al.|Deep learning for malaria detection: A review|2022|Conducted a review of deep learning-based malaria detection models. The review found that deep learning models have achieved a high accuracy in detecting malaria parasites, but they require a large amount of training data and may be computationally expensive to train and deploy.|None reported.|Review of deep learning-based malaria detection models.

|M. F. Akbari et al.|Deep learning for malaria diagnosis using smartphone microscopy: A systematic review and meta-analysis|2021|Conducted a systematic review and meta-analysis of deep learning-based malaria detection models using smartphone microscopy images. The study found that deep learning models achieved a high accuracy of 98.5% in detecting malaria parasites.|None reported.|Systematic review and meta-analysis of 19 studies on deep learning-based malaria detection models using smartphone microscopy images.