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| 1. |  |  |  |  |  |
| **Author** | **Objective (in short)** | **Data Sets** | **ML Models Used** | **Evaluation Metrics** | **XAI Models Used** |
| Varada Vivek Khanna, Krishnaraj Chadaga, Niranajana Sampathila, Srikanth Prabhu, Venkatesh Bhandage, Govardhan K. Hegde. | Detect PCOS using AI with ML and DL classifiers, and propose an automated screening architecture with explainable tools. | 541 patients from Kerala, India, with 43 attributes. | Logistic Regression, Decision Trees, Random Forest, SVM, Naïve Bayes, KNN, AdaBoost, XGBoost, ExtraTrees, and ensemble stacking models. | Accuracy, precision, recall, F1-score, AUC-ROC score, and precision-recall curve. | SHAP, LIME, ELI5, Qlattice, and feature importance with Random Forest. |
| 2. |  |  |  |  |  |
| Perihan Gülşah GÜLHAN, Güzin ÖZMEN, Hüsnü ALPTEKİN | [To determine the best method for follicle detection using ovarian ultrasound images and classify the images as PCOS or normal using a proposed CNN architecture](https://edgeservices.bing.com/edgesvc/chat?udsframed=1&form=SHORUN&clientscopes=chat,noheader,udsedgeshop,channelstable,ntpquery,devtoolsapi,udsinwin11,udsdlpconsent,udsfrontload,cspgrd,&shellsig=ddbf71260a56d5e142084083485ff15e081e33ef&setlang=en-US&darkschemeovr=1&udsps=0&udspp=0#sjevt%7CDiscover.Chat.SydneyClickPageCitation%7Cadpclick%7C0%7C00fd6b0c-363c-44e2-80ea-d16bbac99798) | [Ultrasound images of 14 patients with PCOS and 40 control subjects, totaling 54 images](https://edgeservices.bing.com/edgesvc/chat?udsframed=1&form=SHORUN&clientscopes=chat,noheader,udsedgeshop,channelstable,ntpquery,devtoolsapi,udsinwin11,udsdlpconsent,udsfrontload,cspgrd,&shellsig=ddbf71260a56d5e142084083485ff15e081e33ef&setlang=en-US&darkschemeovr=1&udsps=0&udspp=0#sjevt%7CDiscover.Chat.SydneyClickPageCitation%7Cadpclick%7C2%7C00fd6b0c-363c-44e2-80ea-d16bbac99798) | [Convolutional Neural Network (CNN) and SqueezeNet-based transfer learning](https://edgeservices.bing.com/edgesvc/chat?udsframed=1&form=SHORUN&clientscopes=chat,noheader,udsedgeshop,channelstable,ntpquery,devtoolsapi,udsinwin11,udsdlpconsent,udsfrontload,cspgrd,&shellsig=ddbf71260a56d5e142084083485ff15e081e33ef&setlang=en-US&darkschemeovr=1&udsps=0&udspp=0#sjevt%7CDiscover.Chat.SydneyClickPageCitation%7Cadpclick%7C3%7C00fd6b0c-363c-44e2-80ea-d16bbac99798) | Mean Square Error (MSE), Peak Signal-to-Noise Ratio (PSNR), False Acceptance Rate (FAR), False Rejection Rate (FRR), Dice Score, Jaccard Index, accuracy, sensitivity, precision, and F1 score. |  |
| 3. |  |  |  |  |  |
| Sowmiya S., Snekhalatha Umapathy, Omar Alhajlah, Fadiyah Almutairi, Shabnam Aslam, Ahalya R.K. | To develop an automated system for detecting polycystic ovary syndrome (PCOS) using deep learning techniques. | [Two datasets with ultrasound images; Dataset1: 50 normal and 50 PCOS subjects, Dataset2: 100 normal and 100 PCOS subjects](https://edgeservices.bing.com/edgesvc/chat?udsframed=1&form=SHORUN&clientscopes=chat,noheader,udsedgeshop,channelstable,ntpquery,devtoolsapi,udsinwin11,udsdlpconsent,udsfrontload,cspgrd,&shellsig=ddbf71260a56d5e142084083485ff15e081e33ef&setlang=en-US&darkschemeovr=1&udsps=0&udspp=0#sjevt%7CDiscover.Chat.SydneyClickPageCitation%7Cadpclick%7C0%7C8cfe78a3-23af-4582-ac3a-8869e1b608b1) | [**ML Models Used**: Random Forest (RF), k-star, Stochastic Gradient Descent (SGD), MobileNet, ResNet152V2, DenseNet121, Vision Transformer, and a custom model named Follicles Net (F-Net)](https://edgeservices.bing.com/edgesvc/chat?udsframed=1&form=SHORUN&clientscopes=chat,noheader,udsedgeshop,channelstable,ntpquery,devtoolsapi,udsinwin11,udsdlpconsent,udsfrontload,cspgrd,&shellsig=ddbf71260a56d5e142084083485ff15e081e33ef&setlang=en-US&darkschemeovr=1&udsps=0&udspp=0#sjevt%7CDiscover.Chat.SydneyClickPageCitation%7Cadpclick%7C2%7C8cfe78a3-23af-4582-ac3a-8869e1b608b1) | Classification accuracy, sensitivity, specificity, and area under the curve (AUC). |  |
| 4. |  |  |  |  |  |
| Abrar Alamoudi, Hind S. Alsaif, Irfan Ullah Khan, Omran AlDandan, Nida Aslam, Nourah Alqahtani, Mohammed AlGadeeb, and Ridha Al Bahrani. | [The study aims to develop a computer-aided diagnosis (CAD) model for diagnosing Polycystic Ovary Syndrome (PCOS) using a deep learning fusion approach that combines ultrasound images with clinical data](https://edgeservices.bing.com/edgesvc/chat?udsframed=1&form=SHORUN&clientscopes=chat,noheader,udsedgeshop,channelstable,ntpquery,devtoolsapi,udsinwin11,udsdlpconsent,udsfrontload,cspgrd,&shellsig=ddbf71260a56d5e142084083485ff15e081e33ef&setlang=en-US&darkschemeovr=1&udsps=0&udspp=0#sjevt%7CDiscover.Chat.SydneyClickPageCitation%7Cadpclick%7C0%7C1714380d-7c8e-4ce8-aec8-a36fd5f8a17d) | [The dataset includes 391 ovary ultrasound images (127 PCOM and 264 normal) and clinical data from 285 patients (129 PCOS cases and 156 non-PCOS cases) collected from King Fahad Hospital of the University, Khobar, Saudi Arabia](https://edgeservices.bing.com/edgesvc/chat?udsframed=1&form=SHORUN&clientscopes=chat,noheader,udsedgeshop,channelstable,ntpquery,devtoolsapi,udsinwin11,udsdlpconsent,udsfrontload,cspgrd,&shellsig=ddbf71260a56d5e142084083485ff15e081e33ef&setlang=en-US&darkschemeovr=1&udsps=0&udspp=0#sjevt%7CDiscover.Chat.SydneyClickPageCitation%7Cadpclick%7C2%7C1714380d-7c8e-4ce8-aec8-a36fd5f8a17d) | [Various deep learning models including VGG-16, VGG-19, InceptionV3, DenseNet121, DenseNet201, and MobileNet](https://edgeservices.bing.com/edgesvc/chat?udsframed=1&form=SHORUN&clientscopes=chat,noheader,udsedgeshop,channelstable,ntpquery,devtoolsapi,udsinwin11,udsdlpconsent,udsfrontload,cspgrd,&shellsig=ddbf71260a56d5e142084083485ff15e081e33ef&setlang=en-US&darkschemeovr=1&udsps=0&udspp=0#sjevt%7CDiscover.Chat.SydneyClickPageCitation%7Cadpclick%7C3%7C1714380d-7c8e-4ce8-aec8-a36fd5f8a17d) | [Accuracy, precision, F1-score, recall (sensitivity), and specificity](https://edgeservices.bing.com/edgesvc/chat?udsframed=1&form=SHORUN&clientscopes=chat,noheader,udsedgeshop,channelstable,ntpquery,devtoolsapi,udsinwin11,udsdlpconsent,udsfrontload,cspgrd,&shellsig=ddbf71260a56d5e142084083485ff15e081e33ef&setlang=en-US&darkschemeovr=1&udsps=0&udspp=0#sjevt%7CDiscover.Chat.SydneyClickPageCitation%7Cadpclick%7C5%7C1714380d-7c8e-4ce8-aec8-a36fd5f8a17d) |  |
| 5. |  |  |  |  |  |
| Poonam Moral, Debjani Mustafi, Sudip Kumar Sahana | Develop an explainable AI model for early detection of Polycystic Ovarian Syndrome (PCOS) using machine learning techniques. | PCOS dataset from Kaggle, consisting of 541 records with 43 attributes. | Logistic Regression, Naive Bayes, Random Forest, Adaptive Boosting, Gradient Boosting, Extreme Gradient Boosting, Categorical Boosting, and the proposed hybrid PODBoost model. | [Accuracy, Error-Rate, ROC-AUC Score, Recall, Precision, and F1-Score](https://edgeservices.bing.com/edgesvc/chat?udsframed=1&form=SHORUN&clientscopes=chat,noheader,udsedgeshop,channelstable,ntpquery,devtoolsapi,udsinwin11,udsdlpconsent,udsfrontload,cspgrd,&shellsig=ddbf71260a56d5e142084083485ff15e081e33ef&setlang=en-US&darkschemeovr=1&udsps=0&udspp=0#sjevt%7CDiscover.Chat.SydneyClickPageCitation%7Cadpclick%7C0%7C330ea074-ac4e-4301-bbeb-12b1840bf6e7) | [Local Interpretable Model-Agnostic Explanations (LIME)](https://edgeservices.bing.com/edgesvc/chat?udsframed=1&form=SHORUN&clientscopes=chat,noheader,udsedgeshop,channelstable,ntpquery,devtoolsapi,udsinwin11,udsdlpconsent,udsfrontload,cspgrd,&shellsig=ddbf71260a56d5e142084083485ff15e081e33ef&setlang=en-US&darkschemeovr=1&udsps=0&udspp=0#sjevt%7CDiscover.Chat.SydneyClickPageCitation%7Cadpclick%7C1%7C330ea074-ac4e-4301-bbeb-12b1840bf6e7) |
| 6. |  |  |  |  |  |
| Hela Elmannai, Nora El-Rashidy, Ibrahim Mashal, Shaker El-Sappagh, Hager Saleh, Manal Abdullah Alohali, Sara Farag. | To develop a machine learning model for early detection of Polycystic Ovary Syndrome (PCOS) using optimized feature selection and explainable artificial intelligence (XAI). | [PCOS dataset from Kaggle, including 541 instances and 41 attributes](https://edgeservices.bing.com/edgesvc/chat?udsframed=1&form=SHORUN&clientscopes=chat,noheader,udsedgeshop,channelstable,ntpquery,devtoolsapi,udsinwin11,udsdlpconsent,udsfrontload,cspgrd,&shellsig=ddbf71260a56d5e142084083485ff15e081e33ef&setlang=en-US&darkschemeovr=1&udsps=0&udspp=0#sjevt%7CDiscover.Chat.SydneyClickPageCitation%7Cadpclick%7C0%7C4c9ff8fb-9010-4b64-aa92-ace90f724988) | [Logistic Regression (LR), Random Forest (RF), Decision Tree (DT), Naive Bayes (NB), Support Vector Machine (SVM), K-Nearest Neighbor (KNN), XGBoost, AdaBoost, and Stacking ML](https://edgeservices.bing.com/edgesvc/chat?udsframed=1&form=SHORUN&clientscopes=chat,noheader,udsedgeshop,channelstable,ntpquery,devtoolsapi,udsinwin11,udsdlpconsent,udsfrontload,cspgrd,&shellsig=ddbf71260a56d5e142084083485ff15e081e33ef&setlang=en-US&darkschemeovr=1&udsps=0&udspp=0#sjevt%7CDiscover.Chat.SydneyClickPageCitation%7Cadpclick%7C1%7C4c9ff8fb-9010-4b64-aa92-ace90f724988) | Accuracy (ACC), Precision (PRE), Recall (REC), F1 Score (F1), and Area Under the Receiver Operating Characteristic (ROC) Curve (AUC). | [Local and global explainability techniques to ensure model trust and effectiveness](https://edgeservices.bing.com/edgesvc/chat?udsframed=1&form=SHORUN&clientscopes=chat,noheader,udsedgeshop,channelstable,ntpquery,devtoolsapi,udsinwin11,udsdlpconsent,udsfrontload,cspgrd,&shellsig=ddbf71260a56d5e142084083485ff15e081e33ef&setlang=en-US&darkschemeovr=1&udsps=0&udspp=0#sjevt%7CDiscover.Chat.SydneyClickPageCitation%7Cadpclick%7C3%7C4c9ff8fb-9010-4b64-aa92-ace90f724988) |
| 7. |  |  |  |  |  |
| İpek Balıkçı Çiçek, Zeynep Küçükakçalı, Fatma Hilal Yağın | To extract patient-based explanations of important features in the decision-making process for PCOS risk using the Local Interpretable Model-Agnostic Explanations (LIME) method. | “Polycystic ovary syndrome” dataset from Kaggle, containing data from 541 patients. | Random Forest (RF) | [Accuracy, Sensitivity, Specificity, Positive Predictive Value, Negative Predictive Value, Balanced Accuracy](https://edgeservices.bing.com/edgesvc/chat?udsframed=1&form=SHORUN&clientscopes=chat,noheader,udsedgeshop,channelstable,ntpquery,devtoolsapi,udsinwin11,udsdlpconsent,udsfrontload,cspgrd,&shellsig=ddbf71260a56d5e142084083485ff15e081e33ef&setlang=en-US&darkschemeovr=1&udsps=0&udspp=0#sjevt%7CDiscover.Chat.SydneyClickPageCitation%7Cadpclick%7C0%7C79ad5959-78fa-4870-88a5-9fcb12acf9f7) | [Local Interpretable Model-Agnostic Explanations (LIME)](https://edgeservices.bing.com/edgesvc/chat?udsframed=1&form=SHORUN&clientscopes=chat,noheader,udsedgeshop,channelstable,ntpquery,devtoolsapi,udsinwin11,udsdlpconsent,udsfrontload,cspgrd,&shellsig=ddbf71260a56d5e142084083485ff15e081e33ef&setlang=en-US&darkschemeovr=1&udsps=0&udspp=0#sjevt%7CDiscover.Chat.SydneyClickPageCitation%7Cadpclick%7C1%7C79ad5959-78fa-4870-88a5-9fcb12acf9f7) |
| 8. |  |  |  |  |  |
| Sayma Alam Suha & Muhammad Nazrul Islam | To propose an extended machine learning classification technique for PCOS prediction using ovary ultrasound images | 594 ovary ultrasound (USG) images. | Convolutional Neural Network (CNN) with transfer learning (VGGNet16)  ,Stacking ensemble model with XGBoost as the meta-learner | Accuracy, Precision, Sensitivity (Recall), Specificity, F1 Score, Execution Time, AUC-ROC Curve |  |