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**Software Engineering Department  
Braude College**

Capstone project Phase B

**Automated Medical Diagnosis: Enhancing Chest X-ray Analysis with Convolutional Neural Networks**

**User's Guide**

Project Code: 24-1-D-8

**Supervisor: Dr. Natali Levi**

**Noam Ofir**

**Oded Morag**

GitHub Repo:

<https://github.com/GoodMoodMan/xray_classifier>

1. **Introduction** 
   * Purpose of the system: The system is designed to assist healthcare professionals in analyzing chest X-ray images to detect various pulmonary conditions using advanced machine learning techniques.
   * Brief overview of features:
     1. Upload and analyze chest X-ray images
     2. Detect multiple pulmonary conditions
     3. View detailed analysis results with confidence scores
     4. Store and manage past analyses
2. **User Interface Overview**

**Log in Dashboard**

**A screenshot of a login page

Description automatically generated**

* To access the XRAY CLASSIFIER system, navigate to the login page.
* Enter your username and password in the designated fields.
* Click the blue "Sign in" button to log in.
* If you've forgotten your password, click the "Forgot password?" link for assistance.
* New users can select "Sign Up" in the top right corner to create an account.
* For quick access without an account, use the "Enter as Guest" option.

**Scan Upload Page**

**A screenshot of a computer

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* + After logging in, you'll be directed to the scan upload page.
  + To upload an X-ray image, either drag and drop the file into the designated area or click to browse your files.
  + Once your image is ready, click the blue "Validate and Classify Image" button to proceed with the analysis.

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* + After processing, the system will display your X-ray image on the left side of the screen.
  + On the right, you'll see the top 3 classifications with their probability percentages.
  + Enter the Person ID in the field provided for record-keeping.
  + Use the dropdown menu to select the final classification based on the results and your professional judgment.
  + Click "Submit" to save the results or "Cancel" to discard and start over.

**Admin Functionality Page**

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* + This page is accessible only to users with administrative privileges.
  + Here, you can view a list of all scanned images, including Person ID, Upload Date, and Final Classification.
  + Use the "View" button to examine individual scans in detail.
  + The "Delete" button allows you to remove scans from the system if necessary.
  + For batch operations, use the "Download Unclassified Images" or "Run Filter Script" buttons at the top of the page.

1. **Uploading X-ray Images**

The system accepts JPEG, PNG, and DICOM formats for X-ray images.

1. **Viewing Results**

Interpreting the classification output:

* Results are displayed for each potential condition detected in the X-ray.
* The top 3 classifications are shown with their probability percentages.

Understanding confidence scores:

* Each detected condition is accompanied by a confidence score (0-100%).
* Higher scores indicate greater certainty in the detection.
* Scores below 50% generally indicate low confidence and should be interpreted with caution.

1. **Troubleshooting**

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