Psychology and Psychiatry Sector

Introduction

The API **/virtualbot/analisys_image_report/** is a tool designed to support psychologists and psychiatrists in the analysis of projective psychological tests and neuroimaging. By processing sets of images related to a patient and combining this information with their clinical history (if provided), the API offers a preliminary analysis based on common patterns and relevant findings. The result is a detailed report that includes observations on each image and personalized recommendations. It is important to note that the API does not store images or clinical history, ensuring the privacy and confidentiality of patient data.

How the API /virtualbot/analisys_image_report/ Works

Endpoint: POST /virtualbot/analisys_image_report/

Input Parameters:

1. Patient Images: A .zip file containing the images to be analyzed, such as results from projective tests (e.g., Rorschach test plates with the patient's responses noted) or neuroimaging (e.g., functional magnetic resonance imaging - fMRI).
2. Patient Data: Basic information in JSON format that may include:
   - Name
   - Age
   - Gender
   - Medical or psychological history (if available)
3. User Instructions: A JSON specifying the type of analysis requested on the images. For example, whether the aim is to analyze the patient's responses in the Rorschach test to identify patterns associated with certain disorders.

Example Request:

```
{
  "user": "psychologist@example.com",
  "type": "projective_test",
  "analysis": "Analyze the patient's responses in the Rorschach test to identify patterns of disorganized thinking."
}
```

Example Patient Data:

```
{
  "name": "Luis García",
  "age": "35",
  "gender": "Male",
  "medical_history": "Patient with a history of anxiety and depressive episodes."
}
```

Process:
1. The API receives the .zip file with the images and the patient data.
2. It uses the clinical history to contextualize the analysis (though providing it is not mandatory).
3. It analyzes each image:
   - In projective tests (like the Rorschach test), it identifies patterns in the responses that may be associated with certain personality traits or signs of mental disorders.
   - In neuroimaging (like fMRI), it detects brain alterations or unusual activations in specific areas that may relate to psychological disorders.
4. It generates a detailed report of the findings for each image.
5. It provides recommendations based on the findings, such as suggestions for additional evaluations or therapeutic approaches.

Output:
A report in JSON format that details the findings per image and offers personalized recommendations.

Example JSON Response:


```
{
  "diagnosis": {
    "image_1": "Responses indicate a tendency toward abstract thinking and possible difficulties in perceiving reality.",
    "image_2": "Signs of elevated anxiety and obsessive concerns are observed in the interpretations.",
    "recommendations": [
      "Consider an additional evaluation to rule out generalized anxiety disorder.",
      "Recommend cognitive-behavioral therapy sessions focused on anxiety management."
    ]
  }
}
```


Applications in Psychology and Psychiatry

1. Analysis of Projective Tests like the Rorschach Test:
   - Description: The API can analyze patient responses to the Rorschach test plates, identifying common patterns and possible indicators of certain personality traits or mental disorders.
   - Benefit: Provides psychologists with a preliminary analysis that can complement their assessment, helping to identify areas requiring further attention.

2. Evaluation of Neuroimaging (fMRI):
   - Description: By analyzing functional magnetic resonance imaging (fMRI) images, the API can detect activations or alterations in specific brain areas associated with psychological disorders, such as depression, bipolar disorder, schizophrenia, among others.
   - Benefit: Supports psychiatrists in identifying possible neurobiological correlates of symptoms reported by the patient, contributing to a more accurate diagnosis.

3. Behavioral Pattern Analysis:
   - Description: The API can process images related to behavioral assessment tests, identifying patterns that suggest certain trends or difficulties in the patient's behavior.
   - Benefit: Helps professionals better understand the behavioral profile of the patient, facilitating the planning of appropriate therapeutic interventions.

Practical Examples of API Use

Example 1: Rorschach Test Analysis
Request:
- Instructions: "Analyze the patient's responses in the Rorschach test to identify possible indicators of thought disorder."
Patient Data:


```
{
  "name": "María Fernández",
  "age": "28",
  "gender": "Female",
  "medical_history": "No significant medical history. Reports difficulties concentrating and intrusive thoughts."
}
```


API Response:


```
{
  "diagnosis": {
    "image_1": "The interpretation shows unusual and personalized responses, which may indicate creative or disorganized thinking.",
    "image_2": "Responses suggest possible difficulties in perceiving reality and processing information.",
    "recommendations": [
      "Conduct additional evaluations to rule out psychotic spectrum disorders.",
      "Consider cognitive therapy to address possible distortions in thinking."
    ]
  }
}
```


Example 2: fMRI Evaluation for Depression Detection

Request:
- Instructions: "Analyze fMRI images to identify patterns associated with depressive disorders."
Patient Data:


```
{
  "name": "Juan López",
  "age": "42",
  "gender": "Male",
  "medical_history": "Patient with symptoms of depression for the past 6 months, including anhedonia and lack of energy."
}
```


API Response:


```
{
  "diagnosis": {
    "image_1": "Decreased activity in the prefrontal cortex and increased activity in the amygdala, common patterns in depressive disorders.",
    "recommendations": [
      "Consider antidepressant pharmacological treatment.",
      "Recommend psychological therapy focused on emotional regulation."
    ]
  }
}
```


Example 3: Human Figure Drawing Test Analysis
Request:
- Instructions: "Analyze the patient's drawings to identify possible indicators of anxiety or low self-esteem."
Patient Data:


```
{
  "name": "Laura Martínez",
  "age": "10",
  "gender": "Female",
  "medical_history": "Referred for difficulties at school and withdrawn behaviors."
}
```


API Response:


```
{
  "diagnosis": {
    "image_1": "The drawing shows small figures and weak lines, which may indicate low self-esteem and anxiety.",
    "recommendations": [
      "Evaluate the school and family environment to identify possible stressors.",
```

```
        "Consider psychopedagogical intervention and emotional support."
      ]
    }
}
```


Advantages of Using the API in Psychology and Psychiatry

1. Support in Diagnostic Evaluation:
   - The API provides a preliminary analysis that can complement the professional's evaluation, facilitating the identification of key areas to explore.

2. Efficiency and Time Savings:
   - Automates part of the analysis process for tests and neuroimaging, allowing professionals to focus on interpretation and treatment planning.

3. Automated Second Opinion:
   - Serves as an additional tool that can corroborate or highlight findings that might not be evident at first glance.

4. Personalization of Recommendations:
   - Offers suggestions tailored to the patient's context, considering their history and specific data.

5. Confidentiality and Privacy:
   - Does not store images or personal data, ensuring the security of patient information.

6. Accessibility:
   - Can be used by professionals in various settings, including private practices, clinics, and hospitals, expanding access to advanced analytical tools.

Summary

The API /virtualbot/analisys_image_report/ is a valuable tool for the field of Psychology and Psychiatry, providing support in the analysis of projective psychological tests and neuroimaging. By combining images with the patient's clinical history, the API generates detailed reports and personalized recommendations, facilitating evaluation and treatment planning by professionals. Its implementation enhances efficiency, accuracy, and personalization in patient care, contributing to a more comprehensive and effective approach in the field of mental health.