



Development an artificial intelligence system to diagnose Multiple – System Atrophy (MSA) using the Hot cross bun sign from MRI images on the website format

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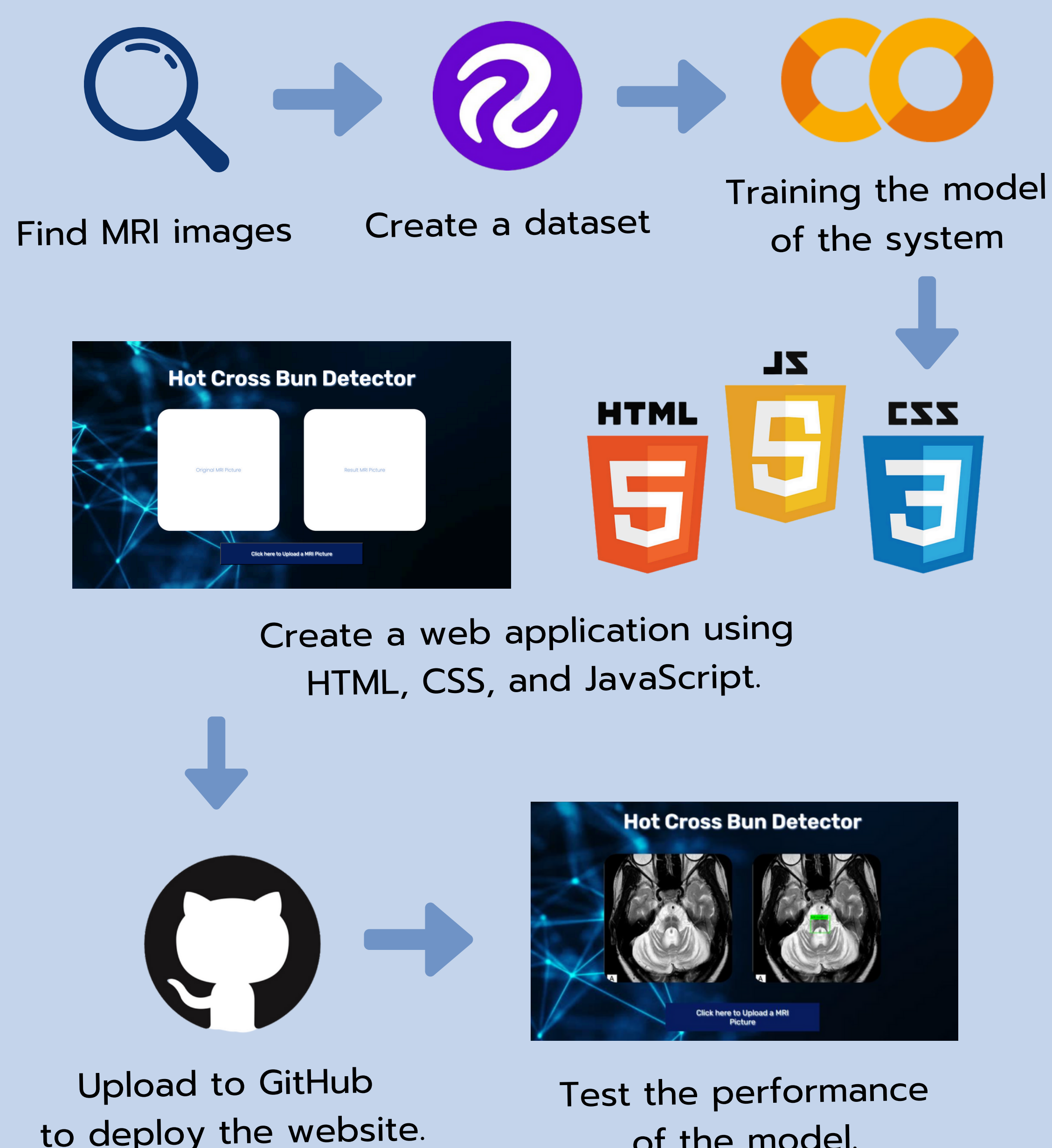
Abstract

Currently, medical diseases are diverse and increasing rapidly, with many dangerous diseases having different causes. Diagnosis to detect diseases is therefore essential for the subsequent treatment process. Multiple System Atrophy (MSA) is a rare neurodegenerative disease that also affects the autonomic nervous system. The authors have applied artificial intelligence to detect the Hot Cross Bun Sign, which is a key characteristic of MSA. This was developed using Google Colab and Visual Studio Code, with the prototype model being Yolov8. The AI was trained to analyze and classify MRI images, including 321 normal brain images and 301 images with the Hot Cross Bun Sign. The system was then developed using HTML, CSS, and JavaScript to be user-friendly in a website format. Data analysis tests were conducted three times to classify images with and without the Hot Cross Bun Sign, totaling 510 images. The average accuracy was calculated to be 86.28%, and the system's accuracy was analyzed using a computer, resulting in an F1 score of 88.44%.

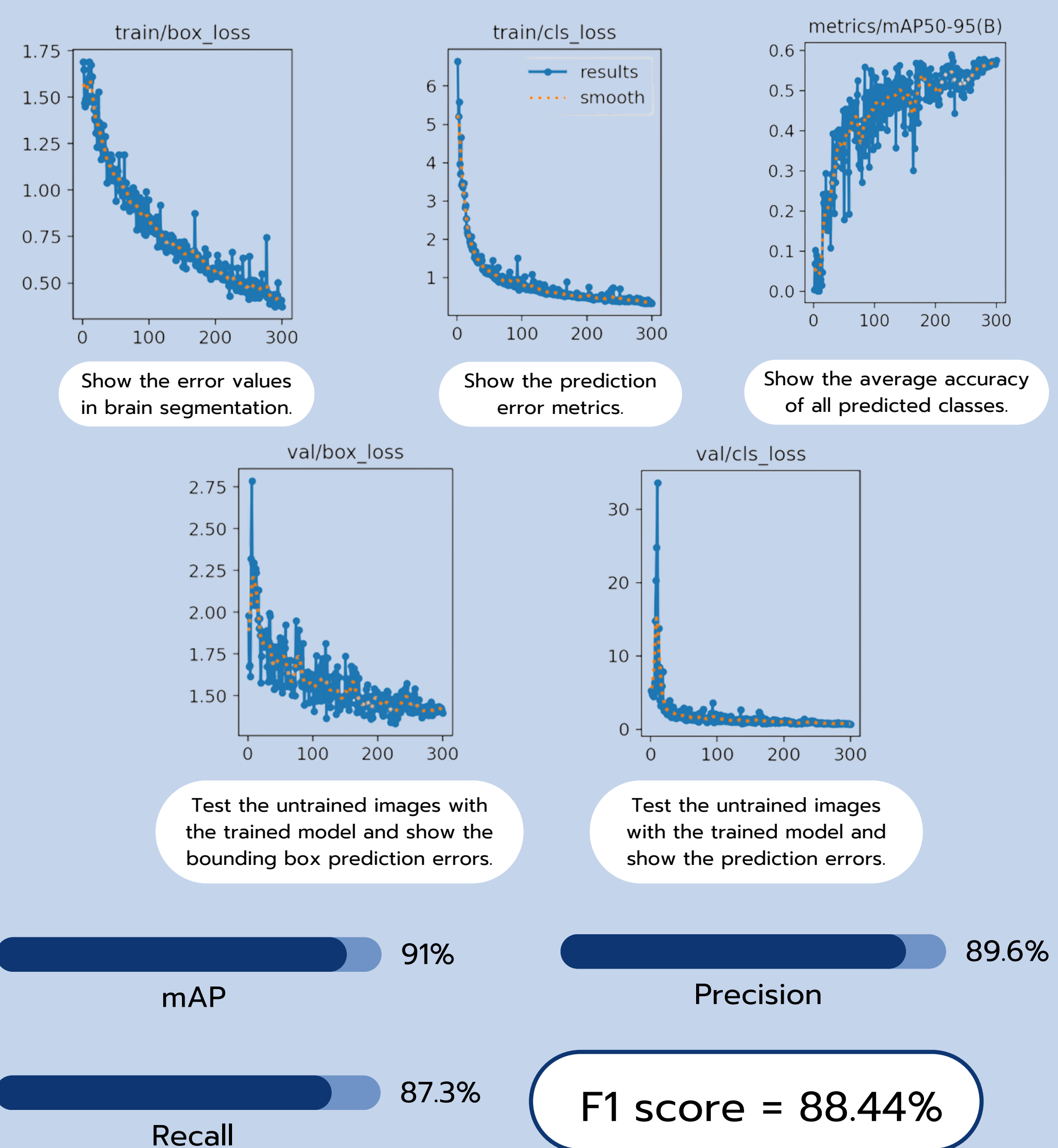
Objective

To develop an artificial intelligence system for diagnosing Multiple System Atrophy (MSA) using the Hot Cross Bun Sign from MRI images in the form of a website.

Methods



Results



Conclusions

From the testing of the MRI image classification process, it was found that the MRI image classification system was tested three times with a total of 255 normal brain MRI images without the Hot Cross Bun Sign, and 255 brain MRI images with the Hot Cross Bun Sign. The average accuracy was 86.28%, and the F1 score obtained from the computer analysis was 88.44%.

Bibliography

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