FU-XIANG ZHAI

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EDUCATION

- Xinjiang University, China
  B.E., GPA:87.69/100, Department of Computer Science 2020.09 – 2024.06
  Rank:3/25

SELECTED AWARDS AND HONORS

- First Prize of the 14th and 15th National University Students Mathematics Competition in Xinjiang
- Third Prize in the Final of the Fifth Huajiao Cup Mathematics Competition for National University Students
- Autonomous Regional People's Government Encouragement Scholarship
- Second Prize of Xinjiang University Physics Experiment Competition
- Outstanding Student Cadre of Xinjiang University
- Outstanding College Graduate

PROFESSIONAL ASSOCIATIONS

- Student member, China Computer Federation

SKILLS and TECHNIQUES

Professional Software

Pycharm, CLion, WeChat Developer Tools, GitHub, Git, EndNote, SPSS, etc.

Professional Skills

Python, PyTorch, C++, Linux, HTML, CSS, JavaScript, etc.

RESEARCH EXPERIENCE

Project: Intelligent detection and classification of Alzheimer's disease based on machine learning

2022.05 – 2022.09

Advisor: Prof. Kai Zhao

Description:

- Responsible for data preprocessing and symptom prediction model construction based on ADNI open source dataset
- Conducted data cleaning, bias normalisation and feature discretisation, learning to apply support vector machine SVM algorithms, trying different kernel functions and parameter configurations
- Evaluated the model performance by FPR and TPR, and draw ROC curves for comparison
- Based on the 3DCNN deep learning model, the PyTorch framework is applied to train the MRI medical image automatic diagnosis model

Project: Research on Text Region Detection Algorithm for Complex Scenes

2023.12 – 2024.05

Advisor: Prof. Mayire Ibrayim

Description:

- Detailed experimental validation and visualisation demonstrates the feasibility and superiority of ResNet50-REM, which scores higher than the baseline model in several datasets.
- Increasing the sensory field of the model, such as through multi-scale convolution, enables the model to capture and integrate a wider range of contextual information to understand complex structures in text images
- The P and F1 scores after full training on the dataset ICDAR 2015 are 0.9230 and 0.8553, which are 1.86% and 1.3% improvement over the baseline network model

Project: National Entrepreneurship and Innovation Training Project for College Students: Design and Development of Xinjiang

University Lifestyle APP Based on Android System

2021.09 – 2022.11

Advisor: Prof. Xufeng Xiao

Description:

- Applied advanced transfer learning techniques to develop a fruit recognition model combining high efficiency with accuracy
- Deducted the initial loading time through technical means such as code optimisation, loading of resources, etc., to continually improve the smoothness and performance of the applet
- Applied for software copyright 2022SR1579662

Project: Interpretability Analysis and Deployment of Migration Learning Self-Trained Fruit Recognition Models

2022.10 – 2023.04

Advisor: Prof. Zhengqing Xiao

Description:

- Constructed a variety of fruit datasets and trained models based on ResNet
- Used PyTorch framework for migration learning to optimise the model parameters
- Using CAM heatmap visualization, Guided Grad-CAM, Deep Feature Decomposition, and tools like Captum and SHAP for interpretability analysis, the model was converted to ONNX format and successfully deployed on the web front-end

REFERENCES

Askar Hamdulla, Ph.D.
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