Bian Yu (Ben) Chen

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SUMMARY

Motivated learner transitioning from geological engineering to data science, with skills in data analysis, machine learning, and deep learning using Python, TensorFlow, and PyTorch. Strong analytical and problem-solving abilities with hands-on data science project experience. Seeking roles in data science to apply technical skills to real-world problems.

EDUCATION

National Taipei University of Technology, Taiwan — Sep 2023 - Present

Master Program in Artificial Intelligence

Relevant coursework: Database, VR Application and Design, Building Deep Learning Applications

University of British Columbia, Canada — May 2016

Bachelor of Applied Science – Geological Engineering

SKILLS

Programming languages: Python, C#, Java
Libraries/Frameworks: Scikit-Learn, TensorFlow (Keras), PyTorch, Lightning, Pandas, Numpy, LangChain
Others: OpenCV, Unity (C#), Matplotlib, Seaborn, Git, Streamlit, FastAPI, Excel

DATA SCIENCE PROJECTS

Retrieval-Augmented Generation (RAG) Model QA Interface with Gradio

- Built a RAG-based QA system using LangChain and Gradio, retrieving and generating answers from a knowledge base with multiple query translation techniques, such as multi-query, RAG-fusion, decomposition, step-back, and HyDE, for enhanced precision.
- Integrated Gradio for real-time interactions, providing answers in English and Traditional Chinese.

Implementing Grad-CAM for Image Classification Model Explainability

- Built and trained a CNN for classifying fruits and implemented Grad-CAM for visualizing heatmaps to enhance interpretability for non-technical users.

Human Image Segmentation with U-Net and EfficientNet

- Developed a U-Net based model with EfficientNet for human segmentation, achieving high accuracy using advanced image augmentations and early stopping.

Object Localization for Fruits Using EfficientNet

- Built a custom object localization model using EfficientNet architecture to predict bounding box coordinates and classify fruits from images.
- Implemented Multi-task Learning to predict both object locations (bounding boxes) and classes simultaneously, leveraging PyTorch and Timm for model creation.

Facial Expression Recognition Using EfficientNet

- Developed a facial emotion recognition model for grayscale images, improving generalization with image augmentations (Albumentations) and optimized using Cross-Entropy Loss and Adam optimizer.

Aerial Road Segmentation Using U-Net

- Built a U-Net based road segmentation model, with Segmentation Models PyTorch (SMP), using aerial images, with EfficientNet for feature extraction, achieving high segmentation accuracy on the Massachusetts Roads Dataset.

Person Re-Identification Using Triplet Loss and Siamese Network with EfficientNet

- Designed a Siamese network using EfficientNet to generate embeddings for person re-identification, achieving robust performance by minimizing anchor-positive and anchor-negative distances.

Facial Keypoint Detection Using ResNet

- Developed a facial keypoint detection model using ResNet18, achieving accurate predictions for 68 facial landmarks with visual validation on test data.

Instagram Fake Account Detection Using Neural Networks

- Created a binary classification model using PyTorch to detect fake Instagram accounts, achieving high accuracy by analyzing user metadata like profile pictures and account settings.

Fake News Detection Using BiLSTM

- Built a BiLSTM model for detecting fake news, employing GPT-2 tokenization and achieving high accuracy through preprocessing techniques and loss curve analysis.

GPT-2 Model Demonstration Web App

- Built a web app to demonstrate GPT-2 internals, including tokenization, self-attention, and next-word predictions, with user-customizable model parameters in Streamlit.

Transformer Architecture Visualization Web App

- Designed an interactive web app to explore the architecture and training dynamics of a custom Transformer model, allowing real-time parameter adjustments and loss visualization.

Gym Member Management System with Facial Recognition (Ongoing)

- Developing a member management system for gym admins with a backend (FastAPI, SQLAlchemy) and facial recognition using PyTorch and OpenCV, automating member access and tracking gym usage.

WORK EXPERIENCE

National Taipei University of Technology, Taipei, Taiwan **Sep 2022 – Sep 2023**

Research Assistant

- Assisted with revising research articles and contributing to journal publications.
- Published several journal articles on fiber-reinforced concrete and dynamic load testing.

All Roads Construction Ltd., British Columbia, Canada **Oct 2018 – June 2020**

Project Engineer

- Applied analytical skills in project cost estimation, transferable to data analysis tasks in data science.
- Utilized Excel to estimate costs, prepare detailed project reports, and track key metrics.

Primo Stoneworks, British Columbia, Canada **June 2017 – Sep 2018**

Project Engineer

- Analyzed project requirements to quantify cost factors such as time, materials, and labor, showcasing a strong foundation in data-driven decision-making and problem-solving.
- Utilized tools like Bluebeam and AutoCAD for data extraction and reporting, showcasing proficiency in technical data handling.

ADDITIONAL COURSES

Coursera (2023):

- TensorFlow: Advanced Techniques Specialization, Data and Deployment Specialization, Developer Specialization
- Deep Learning Specialization & Machine Learning Specialization
- Generative Adversarial Networks Specialization