NING WANG

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SUMMARY

Graduated from research master majored in Reinforcement Learning and Deep Learning applications in trajectory tracking. Experienced in Python programming and familiar with Machine Learning frameworks (e.g., CNN) and libraries. Looking for Machine learning R&D roles.

EDUCATION

Master of Applied Science, Electrical and Computer Engineering   2017.09 – 2020.10
University of Ottawa, ON, GPA: 9.8/10

Bachelor of Engineering, Information and Electronic Engineering   2013.09 – 2017.06
China Agricultural University, China, GPA: 3.44/4

PROJECT EXPERIENCES

Model-Free Optimized Tracking Control System:

Designed an Optimized Trajectory Tracking System for Unmanned Flexible Wing Aircraft and Inverted Pendulum Cart using combined machine learning techniques.

- Applied Q-learning algorithm and a PID controller tuned by Nonlinear-Threshold-Accepting algorithm (NLTA) in the tracking control block, which both effectively control the systems converge to the desired behaviors such as follow a desired rolling maneuver or a desired trajectory while keeping the inverted-pendulum upright.
- Implemented a Neural Network as a feedback block to optimize the system-wide cost during the tracking task, which well complemented the trackers to annihilate the tracking error (with in ±0.005 rad for the Flexible Wing Aircraft application) and reduce the total cost (46% lower than results in the reference paper for the Inverted Pendulum Cart application).

Publications:

- Model-free optimized tracking control heuristic
- Data-Driven Optimized Tracking Control Heuristic for MIMO Structures: A Balance System Case Study

Remote Sensing Image Classification:

- Built a remote sensing image classifier to monitor natural environment land usage and vegetation ecology based on CNN using TensorFlow and Keras frameworks, fine-tuned with data augmentation, batch normalization, dropout and early stopping to achieve 95% accuracy on our test data.
- Experimented transfer learning from VGG16 model, which increased the accuracy to 97%.

Image Captioning:

- Built a CNN-RNN structure to automatically generate captions for images using Pytorch, specifically, a resnet-50 pretrained model as the CNN encoder to generate the feature vector, along with embedding and LSTM layers in the decoder network.

SKILLS

Programming languages: Python, Matlab/Simulink, C++
ML domain and libraries: Reinforcement Learning, CNN, RNN, TensorFlow, Pytorch, Keras

CERTIFICATIONS

UDACITY: Computer Vision, Natural Language Processing

Coursera: TensorFlow Developer Specialization by DeepLearning.AI, Algorithms related, Python 3 Programming