Haoran Su

Looking for Machine Learning Engineer/Research Scientist Internship Opportunities
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EDUCATION

Ph.D., Data Science and Transportation Engineering 12/2021(expected)
New York University New York, NY
Selected Courses: Data Mining, Machine Learning, Deep Learning, Stochastic Modeling, Dynamic Programming
Teaching Assistant in Stochastic Modeling and Operation Research

M.Sc. in Transportation Engineering 05/2018
University of California, Berkeley Berkeley, CA
Selected Courses: Artificial Intelligence, Distributed Computing, Statistical Modeling

B.Sc., Computer Science and Civil Engineering (Double Major) 08/2017
University of California, Berkeley Berkeley, CA
Selected Courses: Data Structure, Algorithms, Computer Architecture, Software Engineering, Database

TECHNICAL SKILLS

Programming Languages	Python, PyTorch, TensorFlow, Java, C/C++, Ruby-on-rail, Matlab, R
Libraries & Toolbox	Pandas, NumPy, SciKit-learn, TensorBoard, Matplotlib, Seaborn, Gym
Platforms & Tools	Git, Docker, Bash, Apache Hadoop, Jupyter, PySpark, AWS EC2, S3

RESEARCH PROJECTS

Uber-Transit Booking Service Analysis through Machine Learning Approaches

- Conducted data mining and wrangling based on self-designed data schema with users and trip information. Formulated model scope and identified as well as labeled users. Performed feature engineering including PCA and LDA to further reduce dimensionality.
- Applied state-of-the-art classification algorithms including Logistic Regression, Random Forest, SVM, XGBoost and KNN, via built-in and self-developed python packages.
- Established a LSTM-based deep neural network model to predict target user's multimodal traveling demand in proposed time-frame. Experimented on target population and increases ordering by 30% through revenue management.

Deep Reinforcement Learning on Emergency Vehicles Coordination in Mixed-autonomy Settings

- Customized OpenAI Gym to model urban roadway from microscopic motion planning perspective to macroscopic traffic management perspective. Established an interface to bridge PyTorch-RL frameworks with simulation software.
- Reproduced state-of-the-art value-based learning algorithms with prioritized experience replay and fixed targets through dueling/double DQN to dispatch real time coordination strategies for vehicles.
- Extended the model into Dec-POMDP settings against non-stationarity. Designed and improved multi-agent actor-critic methods for vehicle coordination. Saved 30% time for emergency vehicle passage than the benchmark system.

Survey of Supervised Learning CNN Models on Image Classification

- Reproduced various versions of ResNet, DenseNet, DarkNet(Yolo) and Inception CNNs as well as their combinations to test t1 and t5 accuracy on ImageNet/MNIST dataset. Applied overfitting by adopting early stopping and dropout.
- Developed and verified a new image augmentation method to improve testing accuracy by 2.5%.
- Compared model performance w.r.t training time, GPU usage, classification accuracy etc.

AWARDS AND CERTIFICATIONS

NYU School of Engineering Fellowship
C2SMART Student Scholarship
Dwight David Eisenhower Transportation Fellowship
Certificate: Machine Learning in Python Scikit-learn
Certificate: Deep Reinforcement Learning:Actor-Critic Methods
Certificate: Deep Q Learning in PyTorch