LINGFENG(RINN) ZHANG

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SUMMARY

- 2nd Year Thesis-based Master of CS/Applied AI student at University of Ottawa.
- Interested in Data Science, Machine Learning, Deep Learning, Natural Language Processing, Computer Vision, Medical Images.
- GitHub: https://github.com/RichardChangCA
- Language: English(professional proficiency), Mandarin(native).

TECHNICAL SKILLS

- **Programming Language:** Python, C, C++, Java, PHP, COBOL, HTML5, CSS3, JavaScript, MATLAB, SQL, R
- **Operating System:** Linux, Mac OS, Windows
- **Software usage:** Jupyter Notebook, Weka, 3Ds MAX, Blender, Adobe Series, Microsoft Series, various IDE, LaTeX
- **Other Skills:** Git, XML, Theory of Project Management, Software Testing, UML design, Cloud Services, Research, Algorithms
- **Framework & Libraries:** TensorFlow, Keras, PyTorch, Django, OpenCV, Android, scikit-learn, NumPy, Pandas, Matplotlib, Plotly, Orange, OpenGL, Spring MVC, Vue.js, Bootstrap, jQuery, WeChat Mini Programs, NLTK, SciPy, ktrain, GeoPandas, PySpark, etc.
- **AI-based Knowledge:** Conventional Machine Learning (supervised, unsupervised), Deep Learning (CNN, RNN, GAN, Graph Neural Networks, etc.), Reinforcement Learning, Computer Vision, Natural Language Processing, Data Mining, Data Visualization, Data Science

EDUCATION

- Master of Computer Science concentration in Applied Artificial Intelligence (thesis-based), University of Ottawa, Canada, 2019(in process)
  - Thesis Topic: Medical Image Segmentation to detect brain Lesions
  - Supervisor: Prof. Jochen Lang
  - Laboratory: VIVA
  - Average Academic Score: A+
- Bachelor of Computer Engineering, Tianjin University of Technology, China, 2015-2019
  - Joint Program with the University of Quebec, Canada.
  - Specialization: Computer Science & Technology (Specialized in Information Management).
  - Average GPA: 90/100
  - Ranking: 2/174.
  - Thesis Supervisor: Prof. Shuangxi Li
  - Excellent Graduate, Excellent Bachelor Thesis
- Bachelor of Applied Computer Science, Université du Québec à Chicoutimi, Canada, 2015-2019
  - Joint Program with Tianjin University of Technology, China
  - Same Specialization, GPA and Ranking as the first degree.
  - Valedictorian of the Undergraduate Joint Program

WORK EXPERIENCE

Environment and Climate Change Canada, Junior Data Scientist(CO-OP 8 months) **2020/09-now**

- Data Science Team
- Data analysis and processing, building up machine learning models, water quality data exploration, geo-spatial data.
- Manager: Dr. Bjenk Ellefsen

Shanghai Jiao Tong University, Research Assistant(Part-time, 20h/week) **2020/10-now**

- UOttawa International Virtual Research Opportunity.
- Multidisciplinary: Bioinformatics with Artificial Intelligence.
- Drug-Target Interaction, Drug-Drug Interaction
- State Key Laboratory of Microbial Metabolism, China.
- Professor: Dongqing Wei

University of Ottawa, Corrector(Contract Part-time) **2020/09-now**

- CSI-4106A: Introduction of Artificial Intelligence

CalmCar Vision System LLC (China), Computer Vision Engineering Intern (full-time) **2019/06-2019/07**

- Marked objects from complex street view images manually
- Assisted the workflow of an autonomous vehicles company and studied various CNN models
- Manager: Shiqing Cheng

Client Server International Inc (China), JAVA Software Engineering Intern (full-time) **2018/01-2018/02**

- Assisted the company software development process and acquired the practical knowledge & skills like Spring MVC, XML
- Developed a solid understanding of JAVA, SQL and HTML
- Manager: Wei Feng

RESEARCH EXPERIENCE AND PROJECTS

Master's Thesis Research **Medical Image Segmentation to detect brain lesions (in the process)**

- Brain lesions area detection and segmentation, MRI medical images, Semantic segmentation, Coarse-to-Fine segmentation, U-Net families Semi-supervised learning & Transfer learning to tackle the lack of data problem, Graph Neural Networks, the self-attention mechanism in computer vision, Attention methods, Reinforcement Learning, etc.
- Cooperation with Children's Hospital of Eastern Ontario.

CSI 5387 Data Mining and Concept Learning Course Project **Real Estate Analysis**

- data preprocessing(feature selection, data cleaning, standarization, bins, re-sampling), data visualization, outlier detection(box plot, K-means, DBSCAN), regression models(linear, support vector, decision tree, voting, MLP, etc.), regression metrics(MAE, MSE, R2, MAPE, MSLE, etc.), model selection methods(n-fold cross-validation, information criterion, hyper-parameter path, etc.), bin-based multi-classes classification(SVM, decision tree, Naive Bayes, Adaboost, etc.), imbalanced dataset classification evaluation(precision, recall, confusion matrix, f-score), statistical experiments(Friedman Test, Nemenyi Test).

CSI 5386 Natural Language Processing Course Project **Image Captioning**

- CNN encoders(VGG16,InceptionV3,MobileNet,ResNet) by transfer learning, RNN decoders(stacked LSTM, GRU with attention mechanism), Evaluation Metrics(BLEU,CIDEr,METEOR), Datasets(Flickr8k, COCO), Django Web Application with the best performance model.

CSI 5155 Machine Learning Course Project **H-1B Visa Classification and Machine Learning Model Evaluation**

- Supervised machine learning models (e.g. tree-based, distance-based, rule-based, linear SVM, naïve Bayes, bagging, boosting, hybrid models, etc.), Data Engineering (data argumentation, feature extraction transformation selection, resampling, etc.), imbalanced dataset (ROC curve and AUC area, confusion matrix, F-measure, average accuracy, recall, precision, etc.), evaluation methods(Friedman Test, Nemenyi Test, Bonferroni-Dunn Test, etc.), training testing speed comparison, space consumption comparison, GPU accelerated machine learning library: cuML, outlier detection, one class learning.

CSI 5138 Introduction of Deep Learning and Reinforcement Learning Course Project **An Exploration of Universal Adversarial Perturbation in Deep Learning**

- Methods of generating adversarial examples, methods of defending adversaries, properties of adversaries in the physical world, explored relationships between the universal adversarial perturbation and the dataset complexity the classifier model complexity, generated non-semantic datasets with various complexity levels.

Bachelor Thesis Project **Intelligent Attendance System Based on Face Recognition and Wi-Fi Fingerprinting**

- Face recognition, anti-spoofing, Android mobile application, Django web application, Wi-Fi fingerprinting, DBSCAN clustering algorithm, the difference between 2.4GHz 5GHz Wi-Fi RSS in real-world, development of present attendance systems.

Toy Engineering Projects

- Images generation by VAE, GAN, WGAN based on MNIST & CIFAR10 datasets
- Sentiment analysis by RNN and LSTM based on the IMDB dataset
- Image Segmentation based on oxford_iiit_pet dataset by UNET architecture with transfer learning
- Text Entailment and Semantic Relatedness by Stacked Bi-LSTM and BERT
- Amazon Echo 'Alexa' AI Ethical Product Analysis (CSI 5137 Ethics in AI course project)
- Web-based online apartment renting management system Web design manually
- Built a virtual environment of a house manually by OpenGL
- Development of Questionnaire Survey System based on the WeChat Mini Program
- Created a short animation by Blender & 3Ds MAX
- Renting car system by COBOL

AWARDS

- School-level Freshman's 1st Scholarship of Tianjin University of Technology
- School-level Renmin 1st Scholarship of Tianjin University of Technology *2
- School-level Renmin 2nd Scholarship of Tianjin University of Technology
- Excellent Youth League Member
- 2nd Prize in IET English Speech Competition
- 3rd Prize in IET English Speech Competition
- 3rd Prize in Intercultural Communication Competence Test
- UOttawa International Students Bursary