Xin Jing

xinhj@umich.edu • 734-834-8416 • Homepage

EDUCATION

University of Michigan   **Ann Arbor, MI**
Master of Science in Electrical and Computer Engineering   *April 2024*
GPA: 3.3/4.0
Coursework: Machine Learning, Computer Vision, Intermediate Programming

Nankai University   **Tianjin, China**
Bachelor of Engineering in Material Chemistry   *June 2019*
GPA: 3.2/4.0
Coursework: Classic Statistics, MATLAB Application, Data Structures and Algorithms

COURSE LABS/PROJECTS

University of Michigan   **Ann Arbor, MI**
Image Generation   *March 2023 - present*

Implemented Neural Style Transfer (NST) to Create Novel Artistic Images
- Synthesized unique artistic images by content-style blend through NST algorithm
- Defined and optimized content and style cost functions utilizing Gram matrix and VGG19 model

Image Colorization
- Added color to greyscale images via classification and pix2pix (GAN)

Image Recognition
ResNet50 Development and Implementation
- Implemented a 50-layer ResNet with identity blocks for image classification, countering vanishing gradients

Car Detection in Autonomous Driving by reproducing YOLOv3
- Detected cars by reproducing YOLOv3 model through non-max suppression and intersection over union
- Converted model predictions into usable bounding box tensors

Image Segmentation with U-Net for Self-Driving
- Built a U-Net model for precise semantic image segmentation on the CARLA dataset
- Applied sparse categorical cross entropy for pixelwise prediction

Face Recognition System Implementation
- Constructed a FaceNet-based system utilizing one-shot learning and triplet loss for efficient face recognition

Transfer Learning with MobileNetV2 for Alpaca Classification
- Fine-tuned final layers of MobileNetV2 model to adapt for Alpaca classification
- Performed data preprocessing and augmentation

CNN Identifier Implementation and Application
- Created a facial expression classifier and a sign language digit identifier through CNNs

NLP and Text Analysis
Transformer Network Implement and Applications
- Implemented a Transformer model with positional embedding, self-attention, masked multi-head attention
- Visualized the impact of encodings by Principal component analysis (PCA)
- Processed resumes by Named-Entity Recognition (NER) through a Hugging Face Transformer tokenizer
- Performed extractive Question Answering with Transformer

Character-level Language Model through RNN for novel dinosaur names
- Developed a character-level language model using RNNs to generate novel dinosaur names
- Addressed the exploding gradient problem by applying gradient clipping

Sentiment Representation Enhancement: Transforming Text to Emoji
- Built an Emojifier model to enrich text with appropriate emojis with LSTM
- Leveraged GloVe embeddings and negative sampling for text sentiment classification

Neural Machine Translation (NMT) with Attention Mechanism: Date Formatting
- Engineered a NMT model using attention mechanism for human-readable to machine-readable date translation
- Implemented bi-directional LSTM for context extraction and visualized attention weights

Operations on Word Vectors
- Solved word analogy problems by measuring the cosine similarity between word vectors
- Neutralized bias for non-gender specific words

Audio / Speech Identification & Generation
Trigger Word Detection System: Speech Recognition
- Created and trained a trigger word detection model, enabling devices to awaken by an activation word
- Utilized spectrograms, 1-D conv layers, Gated Recurrent Unit (GRU) layers, and data synthesis

Improvised a Jazz Solo with LSTM
- Developed a music generation model by LSTM, generating original jazz solos
- Architected LSTM to mitigated vanishing gradients during sequence generation

Web Scraping and Search Tools
Built Restaurant Recommendation Website
- Scraped and visualized restaurant data for different cities in US, showing results on the website

iTunes Store Search Tool
- Set up an interactive command line search tool for iTunes Store

PUBLICATIONS

1. **Xin Jing**, Zhuang-Zhang, Tian-Yang Chen, Jing-Shan Luo*, **A Review of Promising Inorganic Hole Transporting Materials for Perovskite Solar Cells**, *Energy Technology*, 2022

2. Huanhuan Wang, Zhuang Zhang, Jovana V Milić, Liguo Tan, Zaiwei Wang, Rong Chen, **Xin Jing**, Chenyi Yi, Yi Ding, Yuelong Li, Ying Zhao, Xiaodan Zhang, Anders Hagfeldt, Michael Grätzel, Jingshan Luo*, **Water Stable Haloplumbate Modulation for Efficient and Stable Hybrid Perovskite Photovoltaics**, *Advanced Energy Materials*, 2021

RESEARCH

Nankai University / Institute of Optoelectronic Thin Film Devices   **Tianjin, China**
Research Assistant   *June 2019 - July 2022*
Independent Research on Inorganic Hole-Transporting Layer of Perovskite Solar Cells
- Fabricated inorganic hole-transporting layer with a series of methods
- Solved interfacing problems between perovskite and hole-transporting layer through novel solid-air reaction

Nankai University / Institute of New Energy Materials Chemistry   **Tianjin, China**
Project Leader   *June 2016 - April 2019*
Functional Polymers to Improve the Interface Characteristics of Perovskite Solar Cells
- Fabricated organic-inorganic hybrid perovskite solar cells with other two members
- Increased cell efficiency by 11% through smoothing thin-film morphology with micro-doping various polymers

TRAINING

Tianjin Vocational Skills Training Center   **Tianjin, China**
3D-print model designer student   *February 2019 - March 2019*
- Built 3D-print cartoon models with software *Solidworks* and 3D printers

PROGRAMMING

Python (Intermediate), MATLAB (Intermediate), C++ (Basic)

5 Courses

Neural Networks and Deep Learning

Improving Deep Neural Networks: Hyperparameter Tuning, Regularization and Optimization

Structuring Machine Learning Projects

Convolutional Neural Networks

Sequence Models

Jul 15, 2023

xin jing

has successfully completed the online, non-credit Specialization

Deep Learning

Congratulations! You have completed all 5 courses of the Deep Learning Specialization. In this Specialization, you built neural network architectures such as Convolutional Neural Networks, Recurrent Neural Networks, LSTMs, Transformers, and learned how to make them better with strategies such as Dropout, BatchNorm, and Xavier/He initialization. You mastered these theoretical concepts, learned their industry applications using Python and TensorFlow, and tackled real-world cases such as speech recognition, music synthesis, chatbots, machine translation, natural language processing, and more. You are now familiar with the capabilities and challenges of deep learning. You are ready to take the definitive step in the world of AI and participate in the development of leading-edge technology.

Andrew Ng,
Founder,
DeepLearning.AI

Kian Katanforoosh
Co-founder, Workera

Younes Bensouda Mourri
Instructor of AI,
Stanford University

Verify this certificate at:
https://coursera.org/verify/specialization/LAAPQ9DUBXQC