

Zhengyuan Dong(Dora)

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EDUCATION

Hong Kong University (Withdraw)	Oct 2018 - Mar 2021
Ph.D. , Electronic and Electrical Engineering	Hong Kong
<ul style="list-style-type: none">Model Compression in Deep Learning	
Wuhan University	Sep 2014 - Sep 2018
Mathematics Bachelor , School of Mathematics and Statistics	Wuhan
<ul style="list-style-type: none">GPA: 3.6 / 4.0Honors/Awards: WHU 2nd Scholarship (2015-2017)Summer School: UC Berkeley(2016.07-2016.09) Investment, Basic Psychology	

PROFESSIONAL EXPERIENCE

Credit Life (GZ) Smart Technology Co., Ltd.	Nov 2021 - Nov 2022
Data Analyst	
<ul style="list-style-type: none">Responsible for the construction of anti-fraud models before loan, credit amount adjustment strategy during loan, and post-loan bad-debts recover allocation strategy.Responsible for the construction of intra-bank risk scores.	
Hong Kong University	Jun 2019 - Oct 2020
Teaching Assistant	
<ul style="list-style-type: none">HKU, MATH1853, Linear Algebra, Probability and Statistics	
Wuhan University	Feb 2018 - May 2018
Teaching Assistant	
<ul style="list-style-type: none">Complex Analysis	
Qihoo 360 Technology Co., Ltd.	Jul 2017 - Sep 2017
Intern of Data Analyst	
<ul style="list-style-type: none">Responsible for algorithm test for Big Data Center PlatformResponsible for tutorials, examples, and contest design based on the Big Data Center Platform	

RESEARCH EXPERIENCE

Ultimately Rotated BinAry Net	Aug 2020 - Oct 2020
Supervisor: Dr. Ngai Wong, HKU	
<ul style="list-style-type: none">Based on the Rotated Binarized Neural Network (RBNN), we overcome the computational barrier in computing the previously intractable full-size rotation matrix in RBNN, at a favorable cost of merely linear complexity.Extend the optimal weight search space from a line to a surface (namely, from a 1D manifold to a 2D manifold), thereby allowing a higher freedom for locating a better solution, again at a relatively low cost.The proposed URBAN training results in accuracy surpassing the original RBNN and results in SOTA performance.	
A Deep Dive into CNNs: Seeing is Believing	Aug 2019 - Oct 2019
Supervisor: Dr. Ngai Wong, HKU	

- Employ the Non-negative matrix factorization (NMF) for Adversarial Attack Visualization. Exploit NMF on the reshaped non-negative feature map (i.e. after ReLU activation) , then distill k-term different patterns (rank-k NMF approximation) and map the heat maps back to the shape of input for visualization based on the original image.
- Propose Projective NMF (PNMF) and Non-negative Canonical Polyadic Factorization (NCPF) for alleviating the complexity and enhancing the interpretability of DFF visualization. The two sharpened decomposition methods are of less computational complexity than NMF, and achieve comparable performances as NMF.
- Present a preliminary study but not a complete theory to provide important insights for further robust network design. By implementing a sharpen version of NMF on the attacked network features, the variation of feature maps is easy to observe as the attacked degree goes up, especially the case that the predicted label of the successfully tampered samples approach those of the misclassified classes.

Hyperdimensional Computing with Deterministic Separable Binary Filters for Image Recognition

Oct 2018 - Jan 2019

Supervisor: Dr. Ngai Wong, HKU

- Based on image recognition tasks, design HyperDimensional Computing (HDC) classifiers to reduce the computation cost and fasten the recognition process, to be comparable with the state-of-the-art results.
- Integrate Deterministic and Separable Binary Filters (DSBFs) into HDC cognitive systems to extract salient local features for further processing. The DSBFs is designed to capture a series of different local information by its diverse filter, thus boosting the performance and be aligned with HDC classifier as it produces binary feature map.
- Propose the greedy retraining algorithm to substantially boost the learning capability of the classifier, retraining can perform as a redefinition of class vectors which is more biased towards those samples less similar to the class vectors.

Complex Network Synchronization Analysis

Feb 2017 - Jun 2018

Supervisor: Xiaoqun Wu, WHU

- Design linear and nonlinear feedback controller on dynamic nodes in complex network, construct Lyapunov function to achieve the inner synchronization within each individual network.
- Adjust and find the appropriate noise status, topology, dynamic functions of nodes, and adjust the controller and the hypothesis of eigenvalue of Coupling matrix, in order to achieve the outer synchronization between layers of the complex network.
- Conduct numerical experiments on several popular complex networks with well-known dynamic node functions (Chua's circuit, Lu chaotic), to analyze the influences of the settings (topology, noise, coupling strength, number of controllers) on the status of synchronization.

Application on Housing Price based on Expectile Modeling

Mar 2016 - Mar 2017

Supervisor: Yanyan Liu, WHU

- Crawl housing price data and apply data preprocessing (Mean Imputation, Hotdecking, Regression Imputation) to fit the hypothesis on missing data, and rank the priority of factors and features for further prediction.
- Analyze through Least squares, Quantile regression, Expectile Modeling to predict the price trending. Compare the mean square error of the methods and reflect the relation between individual factor and the pricing.

MISCELLANEOUS

- **Skills:** PYTHON, MATLAB, SQL, SAS, C, R