

## ZHIHUI CHEN

### M.S. Statistics, Data Science Stream

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## I. Education & Training

**The Chinese University of Hong Kong, Shenzhen,**

Sep. 2018 - June 2022

M.S. in Statistics, Data Science Stream

- Relevant Coursework: Linear Algebra, Regression Analysis, Statistical Inference, Stochastic Process, Techniques for Data Mining, Machine Learning (PG course)

## II. Research & Professional Experience

### Indoor Monocular Depth Estimation

CUHK(SZ) Professor Rui Huang Research Team

July 2022 - Present

- Conducted literature survey on self-supervised& few-shot depth estimation
- Reappeared Monocular Depth Estimation algorithms e.g. *Enforcing geometric constraints of virtual normal for depth prediction*
- Applied data argumentation to improve the training performance on NYU depth dataset, including cropping images and amending missing values in depth ground truth

### Few-Shot Learning for Time Series Forecasting in Electricity Sector

CUHK(SZ) Professor Chenye Wu Research Team

May 2022 - Present

- Co-designed a feature extraction method to support ensemble clustering for extracting related prior knowledge from historical electricity load data.
- Designed a prototype data generator to generate prototype series from denoised historical data, to convert clustering results to learnable support data.
- Designed two-phase LSTM to constrain hypothesis space by prior knowledge and perform fine-tuning by novel few-shot data
- **Achievement:** Conference Paper *Clustering Enabled Few-Shot Load Forecasting*, submitted to IEEE Sustainable Power and Energy Conference 2021 (accepted).
- **Achievement:** Invention Patent *Few-shot Electricity Load Forestation Method*, (under verification)

### Few-Shot Learning for UAV Electricity Inspection System

Shenzhen Institute of A.I. and Robotics, Dr. Ning Ding Research Team

Jan. 2021 - June 2021

- Cleaned and labelled small scale honeycomb image dataset for FSL algorithm
- Tuned hyper-parameter and adjusted training method to enable cross domain knowledge transfer for few-shot honeycomb detection.
- **Achievement:** 1<sup>st</sup> version of Few-shot Honeycomb Detection Algorithm for UAV, cooperated with South China Power Grid Co., Ltd.

## Few-Shot Learning for Bridge Cable Defect Detection

Shenzhen Institute of A.I. and Robotics, Dr. Ning Ding Research Team     May 2020 - Dec. 2020

- Reappeared object detection algorithms e.g., YOLOv3, Faster R-CNN
- Applied state-of-art meta & few-shot learning methods for bridge surface defect detection
- Adjusted training settings and support dataset to enable efficient cross-domain knowledge transfer in few-shot cable defect detection scenario
- Deployed few-shot detection algorithm to inspection robot using ONNX.
- **Achievement:** Paper *An Automatic Bridge Cable Surface Inspection System Based on Machine Vision and Deep Few-Shot Learning* (in submission).

## III. Publication

- Qiyuan Whang\*, Zhihui Chen\*, Chenyewu, "*Few-Shot Learning based Load Forecasting System*", IEEE Sustainable Power and Energy Conference 2021 (accepted)  
\* The first two authors contributed equally to this work, and hence are co-first authors of this work
- Nan Li, Xiaoguang Zhang, Zhihui Chen, Xufang Pang, Xueqi Fu, Lin Zhang, Lin Ma, Ning Ding, "*An Automatic Bridge Cable Surface Inspection System Based on Machine Vision and Deep Few-Shot Learning*", 2021, (in submission)
- Invention Patent: *Few-shot Electricity Load Forecastation Method* **Inventor:** Zhihui Chen, Qiyuan Wang; **Applicant:** South China Power Grid Co., Ltd. (under verification)

## IV. Teaching& Working Experiences

- June - Sep., 2021: Guosen Securities, Investment Banking Division, Quantitative Trading Intern
- Nov. - Dec., 2019: CUHK Business School, Center of Entrepreneurship, Teaching Assistant
- Feb. - June, 2020: China Alliance of Social Value Investment, Research Intern

## V. Student Work

- June, 2020 - Present: CUHK(SZ), School of Data Science, Student Assistant
- June - Sep., 2020: CUHK(SZ), Harmonia College Oceania Studio, Co-founder
- Sep. 2018 - Sep., 2020: TEDxCUHK(SZ), Vice President

## VI. Honors

- Harmonia College Scholarship 2020: "Outstanding Service Award"
- Harmonia College Scholarship 2021: "Outstanding Leadership Award"

## VII. Skills and Interests

- Programming Skills: C++, Python, MySQL, Linux, Pytorch, Tensorflow, Docker
- Language: TOEFL 105, CET-6 633, GRE 320 V152 Q168
- Interests: Photography, Long-distance running (5km in 24 minutes, 10km in 50 minutes)