

ZHANG, Hongzhen

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Education Backgrounds

Tianjin University *Master's degree in Engineering*. 2017.09 – 2020.01, GPA: 85/100.

Modules: Stochastic Process, Optimization Methods, Advanced Physics, Signal Processing, and Advanced Sensor Technology.

Xiamen University *Bachelor's degree in Engineering, Double degree in Economics*. 2013.09 – 2017.06, GPA: 82/100.

Modules: Calculus, Linear Algebra, Numerical Analysis, Analog/Digital Electronics, Engineering Optics, Signal & System.

Minor in Mathematical Statistics, modules: Mathematical Statistics, Probability, Multivariate Statistics, Bayesian Statistics.

Publications

- **Extension of Terahertz Time Domain Spectroscopy: A Micron-level Thickness Gauging Technology**

Hongzhen Zhang, Lili Shi, Mingxia He*. *Optics Communications*, 506 (2022) 127597.

- **Terahertz Thickness Measurement Based on Stochastic Optimization Algorithm (In Chinese)**

Hongzhen Zhang, Mingxia He*, Lili Shi, Pengfei Wang. *Spectroscopy and Spectral Analysis*, 40(2020) 3066-3070.

- **A terahertz non-polar material detection technology based on Rouard's Method**

with Mingxia He, Lili Shi and Pu Wang. Invention patent, Patent No. CN201910303091.9

- **A thickness measurement technology developed with terahertz spectrum**

with Mingxia He, Lili Shi and Pu Wang. Invention patent, Patent No. CN201811197783.1

- **A multispectral imaging device for the Meibomian glands of human eyes**

with Yanping Chen, Tianyu Zheng and Yifan Yang. Invention patent, Patent No. CN201610250677.X

Research Experiences

Research on terahertz signal processing and spectrum analysis

Tianjin University, Funded by National Natural Science Foundation of China (NSFC). Information extraction methods for terahertz spectra were developed based on evolution optimization algorithms (GA, DE) and Sparse Deconvolution method. For more details, please refer: <https://github.com/HongzhenGit/Information-Extraction-Methods-for-Terahertz-Spectra>.

Research on a multispectral imaging device for the Meibomian glands of human eyes

Xiamen University, Undergraduate research project. A multiple spectral imaging device was developed to assist in the therapy process for human meibomian glands. Using our device, the region of meibomian glands could be highlighted with clear boundaries through model-based image enhancement.

Research on HAR (Heterogeneous Autoregression) models for Shanghai Composite Index

Xiamen University, Graduation thesis (Double Degree). HAR and GARCH models were used to analyze marketing volatilities.

Working Experiences

Discover Financial Service (DFS, Shanghai COE) Senior Analyst, 2020.03 – 2022.07

- *Project 1: Volume Forecast Model*. We developed a time series model for forecasting the application volumes of loan products, in order to catch future trends of loan market, and help with future workforce management for customer-facing agents.
- *Project 2: NLP Text Analysis*. We constructed a Neural Network text predictor based on pre-trained BERT model, and combined it with a Random Forest classifier to automatically recognize and allocate customers' complaints into specific categories. For texts that could not be labeled, the Spherical k-Means algorithm was leveraged to find out their natural clusters and a Community Detection method (Louvain method) was used to extract main topics of these texts.
- *Project 3: Data management App*. I built an App with PyQt framework to maintain the invoice data from third party vendors.

Analog Devices (ADI, Beijing Office) Part-time Algorithm Intern, 2019.07 – 2020.01

For reducing the circuit scale of DPD (Digital Pre-distortion) component in power amplifiers, the Least Angle Regression algorithm was used to implement a sparse pre-distortion model where the number of parameters was constrained.

Awards

- Innovation Award at Discover Financial Service
- Excellence Award at Discover Financial Service
- 1st prize of China National Mathematical Modeling Competition (undergraduate group)

Programming Skills

I have solid skills in Python, MATLAB and SQL language. For more information, please refer: <https://hongzhengit.github.io/>.