

Xu Han

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EDUCATION

THE HONG KONG UNIVERSITY OF SCIENCE AND TECHNOLOGY | **HUATAI SECURITIES CO., LTD.** | **QUANTITATIVE RESEARCHER INTERN**
Feb. 2020 - Aug. 2020 | Remote

PH.D. IN PHYSICS

Oct. 2021(expected) | Hong Kong

Advisor: Prof. Ding Pan

RENMIN UNIVERSITY OF CHINA

B.S. IN PHYSICS

June 2017 | Beijing

UNIVERSITY OF SOUTHERN CALIFORNIA

Semester Abroad Fall 2016 | LA, CA

COURSEWORK

GRADUATE

Topological & Geometric Data Reduction and Visualization

Parallel Programming

Numerical Modeling in Physics

Computational Energy Materials and Simulations

UNDERGRADUATE

Mathematical Analysis

Advanced Algebra

Complex Analysis

Probability & Statistics

Mathematical Method for Physics

Computational Physics

Financial Physics

SKILLS

PROGRAMMING

Python • Shell • C/C++ • Matlab

Fortran • Matlab • L^AT_EX • CSS

LIBRARYIES

Tensorflow • Keras • Pytorch

PROJECT

CSIC 5011 FINAL PROJECT |
FACE'S ORIENTATION RECOGNITION
BASED ON MANIFOLD LEARNING
Apr. 2018- May. 2018 | Hong Kong

- Reorder dozens of face's orientation images with several manifold learning techniques.
- Proved that Local Linearly Embedding exhibited the best performance (~ 98% accuracy).
- Obtained the Best Writing and Presentation Awards.

EXPERIENCE

- Constructed timing model based on the mutation of volatility of SH-HK stock connect' net capital flow. Proved that second order moment of the volatility could improve the performance of both return and retracement effectively.
- Conducted statistical arbitrage on the main contracts of China 10-year and 5-year T-bond futures where the ratio of put-call amount are flexible.
- Quantitized various factors(e.g. fundamental, policy and etc.) which can have influence on the risk free interest in Chinese financial market and then did multi-factor model construction to do the prediction.

RESEARCH

ÅNGSTROM GROUP | RESEARCH ASSISTANT

Sep. 2017 - now | Hong Kong

Conducted molecular dynamics simulations and first-principles calculations of 2D materials with the help of the powerful supercomputers, in order to understand their properties. Machine learning is another useful tool in our present research.

COMPUTATIONAL CONDENSED MATTER THEORY GROUP |
VISITING STUDENT

Aug. 2016 - Dec. 2016 | LA, CA

Worked with **Prof. Stephan Haas** to study the brachistochrone problem between quantum states.

AWARDS

2018	HKUST	University Grants Committee Research Travel Grant
2017-2021	HKUST	Postgraduate Scholarship
2016	RUC	Honored 3rd University Scholarship
2012	National	Provincial 2nd Prize in Chinese Physics Olympiad

PUBLICATIONS

- [1] X. Cai, Z. Wu, **X. Han**, S. Xu, J. Lin, T. Han, X. Feng, P. He, L. An, R. Shi, J. Wang, Y. Cai, J. Liu, D. Pan, and C. Cheng. Bridging the Gap between Atomically Thin Semiconductors and Metals by Unconventional Local Structure Distortion. *To be submitted*.
- [2] T. Han, **X. Han**, J. Lin, B. A.Piot, X. Cai, L. An, X. Zhang, Z. Wu, X. Shi, D. Pan, J. Liu, and N. Wang. Observation of Monolayer-Like Quantum Transport in Few-Layer MoS₂. *To be submitted*.
- [3] H. Li, **X. Han**, D. Pan, X. Yan, H.-W. Wang, C. Wu, G. Cheng, H. Zhang, S. Yang, B. Li, et al. Bandgap Engineering of InSe Single Crystals through S Substitution. *Crystal Growth & Design*, 18(5):2899-2904, 2018.
- [4] J. Liu, L.-K. Ma, F. K. Sheong, L. Zhang, H. Hu, J.-X. Zhang, J. Zhang, Z. Li, C. Ma, **X. Han**, et al. Carboxylate Substitution Position Influencing Polymer Properties and Enabling Non-Fullerene Organic Solar Cells with High Open Circuit Voltage and Low Voltage loss. *Journal of Materials Chemistry A*, 6(35):16874-16881, 2018.
- [5] **X. Han**, J. Lin, J. Liu, N. Wang, and D. Pan. Effects of Hexagonal Boron Nitride Encapsulation on the Electronic Structure of Few-Layer MoS₂. *The Journal of Physical Chemistry C*, 123(23):14797-14802, 2019.