Rongchao Ma

Machine learning, data analysis
Singapore
- Email me on Indeed: http://www.indeed.com/r/Rongchao-Ma/2425eadfa39de3f0

• Education background in physics research and engineering
• Knowledge of objected-oriented coding, data structures, algorithms, and software design
• 3 years of experience in machine learning algorithms
• 3 years' experience in image processing, text detection, character recognition (Python, CV2, tensorflow)
• 3 years' experience in SQL and database
• 15 years' experience in data analysis and mathematical modeling for technical problems
• 8 years' experience in experimental measurements, data acquisition, and numeric calculation (C# / C++ / VB)

Work Experience

Data Scientist
Biomatrix Chain Intelligence
August 2018 to Present

1. Developed software of text detection from images using deep learning algorithms (Python, CV2, tensorflow)
2. Built module for character recognition (OCR)
3. Applied image processing and text processing algorithms to ID card recognition (Python, CV2, pandas, numpy, matplotlib)
4. Improved software for fingerprint image enhancement and recognition
5. Integrated modules into pipeline of OCR system (Python, Docker, Linux)

Data analyst
Huicui Technology Co., Ltd. - Wuhan
February 2017 to May 2018

1. Collected, cleaned and provided modeling and analyses of real estate data used for major business initiatives
2. Experienced in software development including requirements specification, system architecture and design, implementation, integration tests and validation, program management.

Researcher
Technical Institute of Physics and Chemistry, Chinese Academy of Sciences - Beijing
February 2013 to January 2017

1. Developed C# projects for the measuring system (with Agilent meters) and physical analysis.
2. Observed the electromigration phenomenon in liquid metal thin films for the first time.
3. Proposed new entangled quantum states and new teleportation protocol.
4. Constructed the mathematical model for the flux exchange phenomenon in type-II superconductors.

Research & teaching Assistant

University of Alberta - Edmonton
September 2005 to December 2012

1. Developed C# / VB projects for measuring the properties of materials below liquid nitrogen temperature, and numeric calculation on NMR.
2. Discovered the new magnetic and electronic properties of superconductive thin films (Bi-2212, Bi-223, and YBCO).
3. Proposed the infinite series models of flux relaxation and vortex penetration phenomenon in type-II superconductors.
4. Proposed a method for determining the critical current density of a type-II superconductor from arbitrary flux relaxation process.

Researcher

Northwest Institute for Nonferrous Metal Research - Xi'an
September 2003 to August 2005

1. Developed Visual Basic projects for measuring the physical properties of high-Tc superconductors
2. Proposed mathematical models for high-Tc superconductivity and produced long length (250m) high-Tc superconductors (Bi2223/Ag tapes).
3. Derived formulas for the quantum effects of vortex.
4. Proposed new method for flux pinning classification.

Education

PhD in Condensed Matter Physics

University of Alberta - Edmonton
September 2005 to November 2009

Master of Science in Condensed Matter Physics

Institute of Solid State Physics, Chinese Academy of Sciences - Hefei
September 2000 to July 2003

Bachelor of Engineering in Mechanical & Electrical Engineering

Guilin University of Electronic Technology - Guilin
September 1995 to July 1999

Skills

Coding with Python, C# / C++, Visual Basic, SQL, Matlab, CV2, tensorflow, numpy, pandas, matplotlib, Machine learning algorithms, Numeric calculation and data acquisition, Measuring the physical properties of materials below liquid nitrogen temperature

Links

https://www.linkedin.com/in/rongchaoma/

Certifications/Licenses

Deep Learning (5-course specialization)

Machine Learning

The Quantum Internet and Quantum Computers

Quantum Information Science I (Part 1-3)

Quantum Optics 1: Single Photons

Cellular mechanisms of brain function

Quantum Information Science II (Part 3 - Advanced quantum algorithms and information theory)

Introduction to TensorFlow for Artificial Intelligence, Machine Learning, and Deep Learning

Introduction to Big Data

Algorithmic Toolbox

Publications

Rongchao Ma
Theory of packaged entangled states. Reports in Advances of Physical Sciences 1(3), 1750005 (2017). DOI: 10.1142/S2424942417500050. arXiv:1511.02198

Rongchao Ma, Yixin Zhou, and Jing Liu
Floating and flying ferrofluid bridges induced by applied magnetic fields. Mod. Phys. Lett. B 29 (09), 1550029 (2015)

Rongchao Ma, Cangran Guo, Yixin Zhou, Jing Liu
Electromigration induced break-up phenomena in liquid metal printed thin films. Journal of Electronic Materials 43 (11), 4255-4261 (2014)

Rongchao Ma
Flux exchange in inhomogeneous type-II superconductors. Int. J. Mod. Phys. B 28 (9), 1450030 (2014)

Rongchao Ma
Determination of critical current density from arbitrary flux relaxation process. AIP Advances 2, 012125 (2012)

Rongchao Ma
Infinite series models of flux relaxation and vortex penetration constructed at critical points and their unification. J. Appl. Phys. 110, 063911 (2011)

Rongchao Ma, K. H. Chow, J. Jung, D. Prabhakaran, H. Tadatomo, T. Masui, S. Tajima
Temperature dependence of the vortex remanent state in high-Tc superconductors. Phys. Rev. B 83, 212504 (2011).

Rongchao Ma
Vortex penetration and flux relaxation with arbitrary initial conditions in non-ideal and ideal superconductors. J. Appl. Phys. 109, 103910 (2011)

Rongchao Ma
Mathematical model of vortex penetration phenomenon. J. Appl. Phys. 109, 013913 (2011)

Rongchao Ma
Mathematical model of flux relaxation phenomenon. J. Appl. Phys. 108, 053907 (2010)

Rongchao Ma, A. I. Mansour, M. Egilmez, C. E. Winterfield, I. Fan, K. H. Chow, J. Jung, D. Prabhakaran, and F. Razavy
Persistent supercurrents in ring-shaped Bi2Sr2CaCu2Ox single crystal. J. Appl. Phys. 107, 083909 (2010)

I. Mansour, Rongchao Ma, M. Egilmez, M. M. Saber, I. Fan, K. H. Chow, and J. Jung
Evolution of self-organized bulk vortex structure induced by hole doping in the high-temperature superconductor YBa2Cu3O7-δ. Phys. Rev. B 79, 172504 (2009)

M. Egilmez, Rongchao Ma, K. H. Chow, and J. Jung
The anisotropic magnetoresistance in epitaxial thin films and polycrystalline samples of La0.65Ca0.35MnO3. J. Appl. Phys. 105, 07D706 (2009)

M. Egilmez, M. M. Saber, A. I. Mansour, Rongchao Ma, K. H. Chow, and J. Jung
Dramatic strain induced modification of the low field anisotropic magnetoresistance in ultrathin manganite films. Appl. Phys. Lett. 93, 182505 (2008)

Rongchao Ma and Yueteng Ma
On the direction of the magnetic line and the circulating supercurrent of a vortex in type-II superconductors. Physica C 468, 2384–2387 (2008)

Z. Salman, A. I. Mansour, K. H. Chow, M. Beaudoin, I. Fan, J. Jung, T. A. Keeler, R. F. Kiefl, C. D. Levy, R. C. Ma, G. D. Morris, T. J. Parolin, D. Wang, and W. A. MacFarlane
β-NMR of isolated 8Li+ implanted into a thin copper film. Phys. Rev. B 75, 073405 (2007)

Rongchao Ma, Yuefei Ma and Yuping Sun
Quantum effects of vortex in type-II superconductors. Physica C 422, 57-64 (2005)

Rongchao Ma, Yuefei Ma, Wenhai Song, Xuebin Zhu, Shengman Liu, Jiaju Du, Yuping Sun, Chengshan Li, Ping Ji, Yong Feng and Pingxiang Zhang
Imperfection of flux pinning classification based on the pinning center size. Physica C 411, 77-82 (2004)

R. C. Ma, W. H. Song, X. B. Zhu, L. Zhang, S. M. Liu, J. Fang, J. J. Du, Y. P. Sun, C. S. Li, Z. M. Yu, Y. Feng and P. X. Zhang
Enhanced flux pinning in (Bi, Pb)-2223/Ag tapes by slight Ni doping. Physica C 405, 34-40 (2004)

L. Zhang, X. B. Zhu, W. H. Song, R. C. Ma, S. M. Liu, J. J. Du and Y. P. Sun
Resistivity-temperature characteristics of Y-deficient YBCO thin films derived by TFA-MOD method. Physica C 415, 79-84 (2004)

H. Xiao, W. Peng, W. H. Song, R. C. Ma, L. Zhang, J. J. Du and Y. P. Sun
Influence of Mg deficiency on the properties of MgB2. Physica C 386, 648-652 (2003)

Rongchao Ma and Yueteng Ma
Progress in the study of flux relaxation and vortex penetration in type-II superconductors. Superconductivity: Theory, Materials and Applications, ed. Vladimir Rem Romanovskií (Nova Science Publishers Inc, New York, 2011), p.1-14

Rongchao Ma and Yuefei Ma
Magnetic properties and critical current of superconductors. YBCO Superconductor Research Progress, ed. Li-Chun Liáng (Nova Science Publishers Inc, New York, 2008), p.127-144

Rongchao Ma and Yuefei Ma
Pairing correlations in copper oxide superconductors. Superconductivity Research Developments, ed. James R. Tobin (Nova Science Publishers Inc, New York, 2008), p.149-166

Rongchao Ma and Yuefei Ma
On the quantum nature of vortex. New Frontiers in Superconductivity Research, ed. Barry P. Martins (Nova Science Publishers Inc, New York, 2006), p.145-169