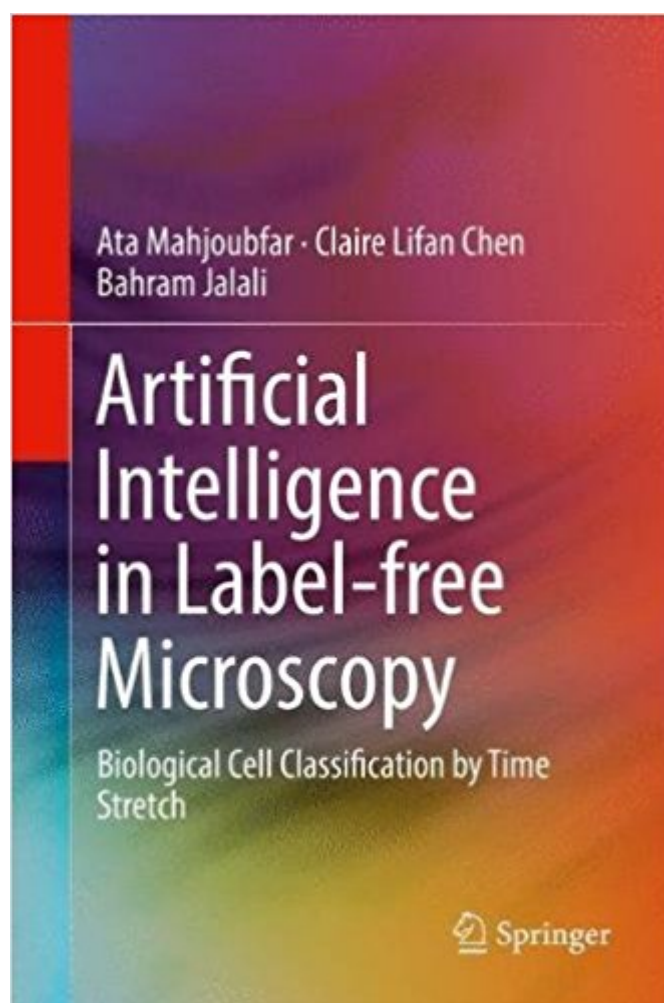The book was found

Artificial Intelligence In Label-free Microscopy: Biological Cell Classification By Time Stretch

Synopsis

This book introduces time-stretch quantitative phase imaging (TS-QPI), a high-throughput label-free imaging flow cytometer developed for big data acquisition and analysis in phenotypic screening. TS-QPI is able to capture quantitative optical phase and intensity images simultaneously, enabling high-content cell analysis, cancer diagnostics, personalized genomics, and drug development. The authors also demonstrate a complete machine learning pipeline that performs optical phase measurement, image processing, feature extraction, and classification, enabling high-throughput quantitative imaging that achieves record high accuracy in label -free cellular phenotypic screening and opens up a new path to data-driven diagnosis.

Book Information

Hardcover: 134 pages

Publisher: Springer; 1st ed. 2017 edition (April 21, 2017)

Language: English

ISBN-10: 3319514474

ISBN-13: 978-3319514475

Product Dimensions: 6.1 x 0.4 x 9.2 inches

Shipping Weight: 8.8 ounces (View shipping rates and policies)

Average Customer Review: Be the first to review this item

Best Sellers Rank: #527,059 in Books (See Top 100 in Books)   #104 in Books > Computers & Technology > Computer Science > AI & Machine Learning > Computer Vision & Pattern Recognition   #135 in Books > Computers & Technology > Computer Science > Bioinformatics   #179 in Books > Engineering & Transportation > Engineering > Bioengineering > Biomedical Engineering

Customer Reviews

This book introduces time-stretch quantitative phase imaging (TS-QPI), a high-throughput label-free imaging flow cytometer developed for big data acquisition and analysis in phenotypic screening. TS-QPI is able to capture quantitative optical phase and intensity images simultaneously, enabling high-content cell analysis, cancer diagnostics, personalized genomics, and drug development. The authors also demonstrate a complete machine learning pipeline that performs optical phase measurement, image processing, feature extraction, and classification, enabling high-throughput quantitative imaging that achieves record high accuracy in label -free cellular phenotypic screening and opens up a new path to data-driven diagnosis.â ¢ Demonstrates how machine learning is used

in high-speed microscopy imaging to facilitate medical diagnosis;â ¢ Provides a systematic and comprehensive illustration of time stretch technology;â ¢ Enables multidisciplinary application, including industrial, biomedical, and artificial intelligence.

Ata Mahjoubfar is a postdoctoral scholar in the Department of Electrical Engineering and California NanoSystems Institute at University of California Los Angeles. He received his Bachelor's and Master's degrees from University of Tehran, Iran in 2006 and 2008, respectively, and his Ph.D. degree from University of California, Los Angeles (UCLA) in 2014. He was the cofounder of OSA/SPIE student chapter at UCLA and its president in 2012. He is the author of more than 35 peer-reviewed publications, and he holds two international patents. His research interests include artificial intelligence, machine vision and learning, imaging and visualization, ultrafast data acquisition and analytics, biomedical technology, and financial engineering.Claire Lifan Chen is a senior application engineer at Lumentum Operations LLC. She received her Ph.D. degree in Electrical Engineering and M.Sc. degree in Bioengineering at University of California, Los Angeles in 2015 and 2012, respectively. She received her B.Sc. degree in Optics Science and Engineering from Fudan University, China in 2010. Dr. Chen was a member of California NanoSystems Institute from 2013 to 2015 and the president of OSA/SPIE student chapter at UCLA in 2015. She has authored and co-authored 14 peer-reviewed publications and 2 patents. Her research interests include machine learning, data acquisition and analytics, image processing, and high-throughput imaging with applications in biomedical and information technologies.Bahram Jalali is the Northrop-Grumman Endowed Chair and Professor of Electrical Engineering at UCLA with joint appointments in Biomedical Engineering, California NanoSystems Institute (CNSI) and Department of Surgery at the UCLA School of Medicine. He is the inventor of the Photonic Time Stretch, a measurement technique that has led to discoveries of new scientific phenomena and to technological inventions. He received his Ph.D. in Applied Physics from Columbia University in 1989 and was with Bell Laboratories in Murray Hill, New Jersey until 2002 before joining UCLA. He is a Fellow of IEEE, the Optical Society of America (OSA), the American Physical Society (APS) and SPIE. He is the recipient of the R.W. Wood Prize from Optical Society of America for the invention and demonstration of the first Silicon Laser, the Aron Kressel Award of the IEEE Photonics Society, the Achievement Medal from IET for his contributions to field of instrumentation for cancer detection, and the Distinguished Engineering Achievement Award from the Engineers Council. He was the founder and CEO of Cognet, a CMOS fiber optics company that was acquired by Intel in 2001. In 2005 he was elected into the Scientific American Top 50, and received the BrideGate 20 Award in

2001 for his entrepreneurial accomplishments and contributions to Southern California economy.

Artificial Intelligence in Label-free Microscopy: Biological Cell Classification by Time Stretch Readings in Medical Artificial Intelligence. The First Decade (Addison-Wesley Series in Artificial Intelligence) Electron microscopy for beginners: Easy course for understanding and doing electron microscopy (Electron microscopy in Science) Emotional Intelligence: Why You're Smarter But They Are More Successful(Emotional intelligence leadership,Emotional Quotient,emotional intelligence depression,emotional intelligence workbook) Liquid Cell Electron Microscopy (Advances in Microscopy and Microanalysis) Start and Run Your Own Record Label, Third Edition: Winning Marketing Strategies for Today's Music Industry (Start & Run Your Own Record Label) FBA: Step-By-Step Guide To Launching Your Private Label Products and Making Money On (FBA, FBA, Private Label) FBA: FBA Blueprint: A Step-By-Step Guide to Private Label & Build a Six-Figure Passive Income Selling on (FBA, Private Label, Passive Income) Private Label Empire: Build a Brand - Launch on FBA - The Perfect Home-Based Business to earn $1000 to $20000 per Month (FBA, FBA ... Physical Products, Private Label, FBA) Debt Free for Life: The Ultimate Guide to Get Out of Debt (FREE Bonuses Included) (Debt, Debt Free, Debt Free Forever, Debt Free for Life, Debt Free for Good, Debt Management, Get Out of Debt) Allergy-free Desserts: Gluten-free, Dairy-free, Egg-free, Soy-free, and Nut-free Delights Emotional Intelligence: 3 Manuscripts - Emotional Intelligence Definitive Guide, Mastery, Complete Step by Step Guide (Social Engineering, Leadership, ... (Emotional Intelligence Series Book 4) WHO Classification of Tumours of Haematopoietic and Lymphoid Tissues (IARC WHO Classification of Tumours) WHO Classification of Tumours of Endocrine Organs (IARC WHO Classification of Tumours) WHO Classification of Head and Neck Tumours (IARC WHO Classification of Tumours) WHO Classification of Tumours of the Central Nervous System (IARC WHO Classification of Tumours) WHO Classification of Tumours of the Lung, Pleura, Thymus and Heart (IARC WHO Classification of Tumours) WHO Classification of Tumours of the Urinary System and Male Genital Organs (IARC WHO Classification of Tumours) WHO Classification of Tumours of Soft Tissue and Bone (IARC WHO Classification of Tumours) WHO Classification of Tumours of Haematopoietic and Lymphoid Tissue [OP] (IARC WHO Classification of Tumours)

Privacy

FAQ & Help