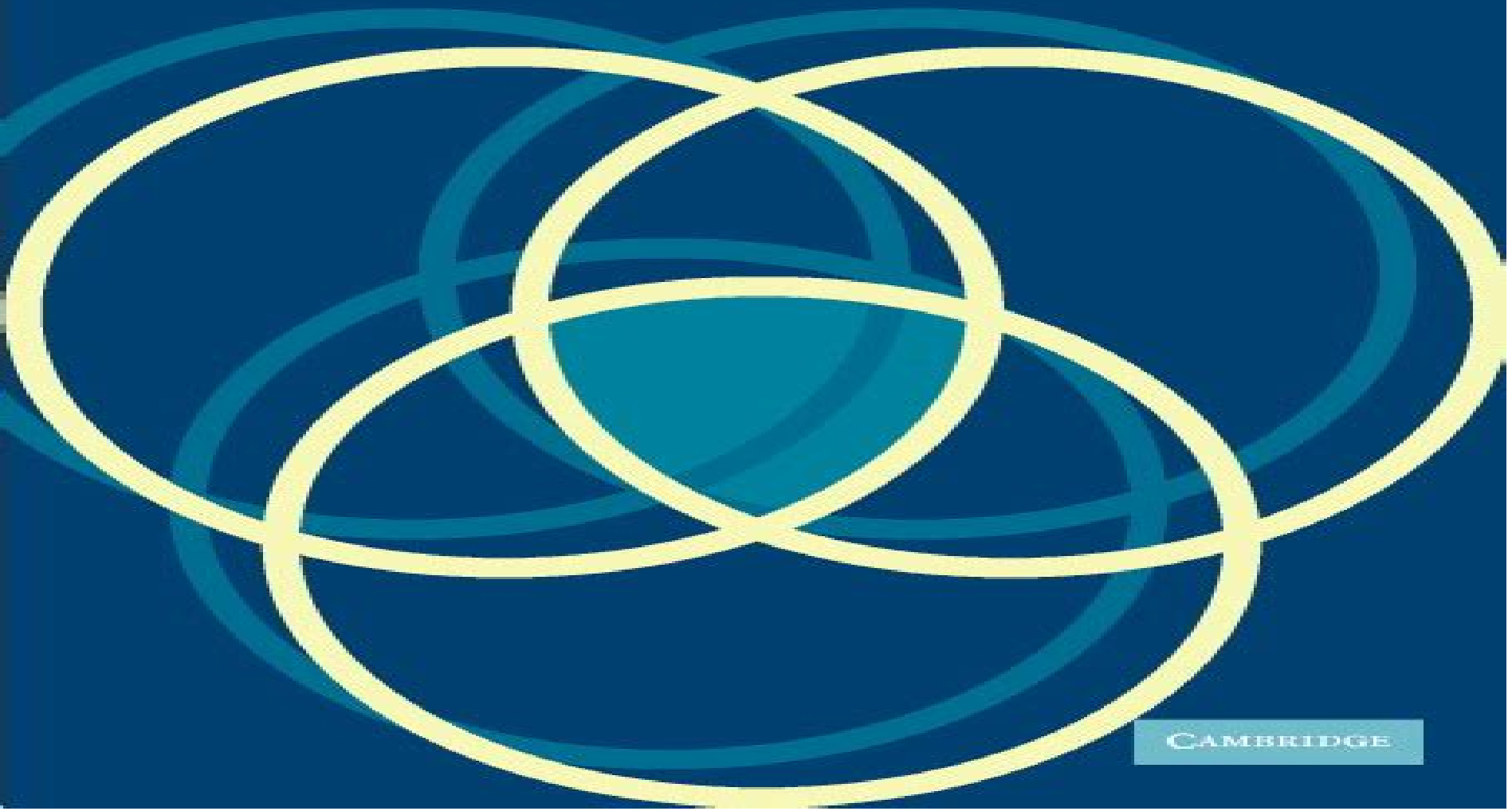


# Correlation Pattern Recognition

**B. V. K. Vijaya Kumar, Abhijit Mahalanobis,  
and Richard D. Juday**



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# Correlation Pattern Recognition

**Hyungsuck Cho**



## **Correlation Pattern Recognition:**

**Correlation Pattern Recognition** B. V. K. Vijaya Kumar, Abhijit Mahalanobis, Richard D. Juday, 2005-11-24 Correlation is a robust and general technique for pattern recognition and is used in many applications such as automatic target recognition biometric recognition and optical character recognition The design analysis and use of correlation pattern recognition algorithms requires background information including linear systems theory random variables and processes matrix vector methods detection and estimation theory digital signal processing and optical processing This book provides a needed review of this diverse background material and develops the signal processing theory the pattern recognition metrics and the practical application know how from basic premises It shows both digital and optical implementations It also contains technology presented by the team that developed it and includes case studies of significant interest such as face and fingerprint recognition Suitable for graduate students taking courses in pattern recognition theory whilst reaching technical levels of interest to the professional practitioner

Correlation Pattern Recognition B. V. K. Vijaya Kumar, Richard D. Juday, Abhijit Mahalanobis, 2014-05-14 A review of the background material needed for correlation pattern recognition for graduate students and practitioners

**Correlation Pattern Recognition** Abhijit Mahalanobis, 1997 Correlation Pattern Recognition B. V. K. Vijaya Kumar, Abhijit Mahalanobis, Richard D. Juday, 2005-11-24 Correlation is a robust and general technique for pattern recognition and is used in many applications such as automatic target recognition biometric recognition and optical character recognition The design analysis and use of correlation pattern recognition algorithms requires background information including linear systems theory random variables and processes matrix vector methods detection and estimation theory digital signal processing and optical processing This 2005 book provides a needed review of this diverse background material and develops the signal processing theory the pattern recognition metrics and the practical application know how from basic premises It shows both digital and optical implementations It also contains technology presented by the team that developed it and includes case studies of significant interest such as face and fingerprint recognition Suitable for graduate students taking courses in pattern recognition theory whilst reaching technical levels of interest to the professional practitioner

**Eigen and Nonlinear Methods for Advanced Correlation Pattern Recognition** Mohamed I. Alkanhal, 2000 *High Accuracy Correlation Based Pattern Recognition* Hadar I. Avi-Itzhak, 1994

Pattern Recognition Jesús Ariel Carrasco-Ochoa, José Francisco Martínez-Trinidad, José Arturo Olvera-López, Joaquín Salas, 2019-06-19 This book constitutes the proceedings of the 11th Mexican Conference on Pattern Recognition MCPR 2019 held in Quer taro Mexico in June 2019 The 40 papers presented in this volume were carefully reviewed and selected from 86 submissions They were organized in topical sections named artificial intelligence techniques and recognition computer vision industrial and medical applications of pattern recognition image processing and analysis pattern recognition techniques signal processing and analysis natural language and processing and recognition

*New Correlation Filters for Symbolic*

*Rule-based Pattern Recognition* Abhijit Mahalanobis,1987

**Weighted-area Correlation and Bidirectional Flow of Information in Pattern Recognition** R. D Freeman (Jr),SYSTEM DEVELOPMENT CORP SANTA MONICA CALIF.,1963

This report describes an investigation of two problems in pattern recognition The first was to estimate empirically the error rate to be expected using weighted area correlation on single font uncontrolled typed characters A computer program used a learning procedure to create new templates based on those inputs it was unsure of A total of 650 inputs were used during which the error rate dropped by almost an order of magnitude to under 1% The second problem was to test the power of simple bidirectional flow of information in pattern recognition Even when weighted area correlation could not positively identify a sample it could reduce the ambiguity to a list of candidates This list was never over six out of a possible 26 and averaged between one and three An unsophisticated procedure which involved no learning was used to compare all pairs of elements on the candidate list in an attempt to eliminate one of the pair The results show the value of bidirectional flow of information Finally a more sophisticated system is described for recognizing typed letters and the form in which bidirectional flow of information was used in the study is considered in more general terms Author *Pattern Recognition for Reliability*

*Assessment of Water Distribution Networks* N. Trifunovic,2012-02-13 This study investigates the patterns that describe reliability of water distribution networks focusing to the node connectivity energy balance and economics of construction operation and maintenance A number of measures to evaluate the network resilience has been developed and assessed to arrive at more accurate diagnostics of regular and irreg Opto-Mechatronic Systems Handbook Hyungsuck

Cho,2002-09-30 Opto mechatronics the fusion of optical and mechatronic technologies has been integral in the evolution of machines systems and products that are smaller and more precise more intelligent and more autonomous For the technology to reach its full potential however engineers and researchers from many disciplines must learn to work together through every phase of system development To date little effort has been expended either in practice or in the literature to eliminate the boundaries that exist between the optics and mechatronics communities The Opto Mechatronics Systems Handbook is the first step in that direction Richly illustrated and featuring contributions from an international panel of experts it meets three essential objectives Present the definitions fundamentals and applications of the technology Provide a multidisciplinary perspective that shows how optical systems and devices can be integrated with mechatronic systems at all stages from conceptualization to design and manufacturing Demonstrate the roles and synergistic effects of optical systems in overall system performance Along with his fresh approach and systems perspective the editor has taken care to address real cutting edge technologies including precision opto mechatronic systems intelligent robots and opto microsensors Ultimately the Opto Mechatronics Systems Handbook provides readers with the technological foundation for developing further innovative products and systems **Selected Papers on Optical Pattern Recognition Using Joint Transform Correlation**

Mohammad S. Alam,Brian J. Thompson,1999 SPIE Milestones are collections of seminal papers from the world literature

covering important discoveries and developments in optics and photonics      *Pattern Recognition Employing Spatially Variant Unconstrained Correlation Filters* Akber Abid Gardezi, 2013      *Real-Time Pattern Recognition with Adaptive Correlation Filters* Vitaly Kober, J. Angel Gonzalez-Fraga, Josue Alvarez-Borrego, Victor H. Diaz-Ramirez, 2007 Adaptive pattern recognition is still in state of rapid evolution In this chapter we proposed digital and hybrid optodigital systems designed on the base of adaptive correlation filters to improve recognition of objects in cluttered backgrounds It was shown that the proposed iterative filter design algorithms with a few training iterations helps us to take the control over the whole correlation plane The digital systems are based on iterative training of the SDF filters The hybrid systems additionally take into account real characteristics of used optoelectronics devices The digital systems can be easily implemented in a computer whereas the hybrid systems are able to provide real time pattern recognition The computer simulation and experimental results demonstrated a good performance of the proposed filters for pattern recognition comparing with known correlation filters The suggested filters possess high scene adaptivity good robustness to small geometric image distortions and input noise      *Pattern Recognition, Inner Products and Correlation Filters*, 1991 In this paper we review correlation filters as an approach to pattern recognition with a special emphasis on the consequences of normalizing the correlation to achieve intensity invariance Intensity invariance is effected using the Cauchy Schwarz inequality to normalize the correlation integral We discuss the implications of this criterion for the application of correlation filters to the pattern recognition problem It is shown that normalized phase only and synthetic discriminate functions do not provide the recognition discrimination obtained with the classical matched filter 34 refs 5 figs      *Academic Press Library in Signal Processing*, 2013-09-14 This fourth volume edited and authored by world leading experts gives a review of the principles methods and techniques of important and emerging research topics and technologies in Image Video Processing and Analysis Hardware Audio Acoustic and Speech Processing With this reference source you will Quickly grasp a new area of research Understand the underlying principles of a topic and its application Ascertain how a topic relates to other areas and learn of the research issues yet to be resolved Quick tutorial reviews of important and emerging topics of research in Image Video Processing and Analysis Hardware Audio Acoustic and Speech Processing Presents core principles and shows their application Reference content on core principles technologies algorithms and applications Comprehensive references to journal articles and other literature on which to build further more specific and detailed knowledge Edited by leading people in the field who through their reputation have been able to commission experts to write on a particular topic      *Pattern Recognition and Tracking in Forward Looking Infrared Imagery Using Correlation Filters* Sharif Md. Ataulah Bhuiyan, 2004      *Efficient Algorithms for Correlation Pattern Recognition* Pradeep Ragathan, 2007 This dissertation develops efficient QCFs that offer significant savings in storage requirements and computational complexity over existing designs Firstly an adaptive algorithm is presented that is able to modify the QCF coefficients as new data is observed Secondly a transform domain implementation

of the QCF is presented that has the benefits of lower computational complexity and computational requirements while retaining excellent recognition accuracy Finally a two dimensional QCF is presented that holds the potential to further save on storage and computations The techniques are developed based on the recently proposed Rayleigh Quotient Quadratic Correlation Filter RQQCF and simulation results are provided on synthetic and real datasets *Advances in Biometrics* N. K. Ratha,Venu Govindaraju,2007-10-06 Biometrics technology continues to stride forward with its wider acceptance and its perceived need in various new security facets of modern society Biometrics is being required to meet the growing challenges of identity management While biometrics finds use in all diverse applications the research challenges continue to grow as the user community expects a fully automatic system to cover the whole universal population with almost no errors Recent advances in biometrics include new developments in sensors modalities and algorithms As new sensors are designed newer challenges emerge in the algorithms for accurate recognition New modalities have been discovered in addition to the fusion of existing modalities to improve accuracy and wider coverage Written for researchers advanced students and practitioners to use as a handbook this volume captures the very latest state of the art research contributions from leading international researchersin the field **The Application of Pattern Recognition to Chemical Analysis** Nels H. Mahle,1974

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