Barrier options pricing under stochastic volatility using Monte Carlo simulation

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ARTICLE INFO

ABSTRACT

The aim of this paper is to evaluate barrier options by considering volatility as stochastic following the CIR process used in Heston (1993). To solve this problem, we used Monte Carlo simulation. We studied the effects of stochastic volatility on the value of the barrier option by considering different values of the determinants of the option. We illustrated their effects in twelve graphs. We found that in general, regardless of the parameter under study, the stochastic volatility model significantly overvalues the in-the-money (ITM) barrier options, and slightly the deep-in-the-money (DIP) options, while slightly undervaluing the near-out-the-money (NTM) options.

Introduction

Barrier options are very popular and widely used in financial markets. Indeed, the family of barrier options includes a wide variety of options frequently used in practice because they have two major advantages, namely their very attractive prices compared to ordinary options with similar characteristics, as well as their great flexibility to meet investor's expectations (K Cheng, 2003). A barrier option provides the holder with the right to buy (call option) or sell (put option) a certain amount of an underlying asset at a given price and given maturity initially determined and this conditionally to the hypothetical crossing of a threshold also predetermined (the barrier). It is therefore a so-called path-dependent option, that is to say an option whose gain is based on the trajectory followed by the underlying asset along its life period. The valuation of options and in particular the barrier options, presents an interest both for academicians and practitioners in the financial markets. In this sense, in 1973 Black & Scholes proposed the first method of pricing vanilla options in which the volatility of the underlying asset was considered constant (Black & Scholes, 1973). In the same option pricing context, Merton in 1973 (Merton, 1973) suggested another closed formula that allows the pricing of Call Down and Out barrier options. Subsequently, the evaluation of other types of barrier options, such as activating, deactivating, up and down, was established by Reiner and Rubinstein in 1991 (Rubinstein & Reiner, 1991). The existence of several standard option pricing models has led to the diversification of barrier options assessment procedures such as the binomial tree model proposed by Cox, Ross and Rubinstein in 1979 (M Rubinstein, 2000). However, Boyle in 1986 showed that use of this model did not allow for a rapid convergence of the price of the barrier option (P Boyle, 1986). This led him, therefore, to propose another useful model for the location of the barrier named trinomial tree model. On the other hand, the latter had limits especially when the level of the barrier is close to or far from the initial price of the underlying asset. Subsequently, this failure was noted by Ritchken in 1995 (P Ritchken, 1995). So far, all the aforementioned models are the first-generation models since they were developed under the constraint that volatility is constant in time or so-called deterministic. On the other hand, by studying the financial series we can see that they have several properties that cannot be studied under constant volatility. Thus, the reality of the financial market rejects the assumption of a normal distribution of market returns and invalidates, therefore, the Black-Sholes model and the other valuation models that consider volatility as a deterministic functional and that give bias values. Indeed, this disadvantage becomes very problematic when it comes to evaluating exotic options such as barrier options. To overcome this, several models, namely the models of local volatility or stochastic volatility, were set up and aimed at introducing the specific behavior of volatility. In 1993, Heston proposed a stochastic

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Barrier Option Pricing Under Sabr Model Using Monte Carlo:

Barrier Option Pricing Under SABR Model Using Monte Carlo Methods Junling Hu,2013 Abstract The project investigates the prices of barrier options from the constant underlying volatility in the Black Scholes model to stochastic volatility model in SABR framework The constant volatility assumption in derivative pricing is not able to capture the dynamics of volatility In order to resolve the shortcomings of the Black Scholes model it becomes necessary to find a model that reproduces the smile effect of the volatility To model the volatility more accurately we look into the recently developed SABR model which is widely used by practitioners in the financial industry Pricing a barrier option whose payoff to be path dependent intrigued us to find a proper numerical method to approximate its price We discuss the basic sampling methods of Monte Carlo and several popular variance reduction techniques Then we apply Monte Carlo methods to simulate the price of the down and out put barrier options under the Black Scholes model and the SABR model as well as compare the features of these two models   **Financial Modelling** Joerg Kienitz,Daniel Wetterau,2013-02-18 Financial modelling Theory Implementation and Practice with MATLAB Source J rg Kienitz and Daniel Wetterau Financial Modelling Theory Implementation and Practice with MATLAB Source is a unique combination of quantitative techniques the application to financial problems and programming using Matlab The book enables the reader to model design and implement a wide range of financial models for derivatives pricing and asset allocation providing practitioners with complete financial modelling workflow from model choice deriving prices and Greeks using semi analytic and simulation techniques and calibration even for exotic options The book is split into three parts The first part considers financial markets in general and looks at the complex models needed to handle observed structures reviewing models based on diffusions including stochastic local volatility models and pure jump processes It shows the possible risk neutral densities implied volatility surfaces option pricing and typical paths for a variety of models including SABR Heston Bates Bates Hull White Displaced Heston or stochastic volatility versions of Variance Gamma respectively Normal Inverse Gaussian models and finally multi dimensional models The stochastic local volatility Libor market model with time dependent parameters is considered and as an application how to price and risk manage CMS spread products is demonstrated The second part of the book deals with numerical methods which enables the reader to use the models of the first part for pricing and risk management covering methods based on direct integration and Fourier transforms and detailing the implementation of the COS CONV Carr Madan method or Fourier Space Time Stepping This is applied to pricing of European Bermudan and exotic options as well as the calculation of the Greeks The Monte Carlo simulation technique is outlined and bridge sampling is discussed in a Gaussian setting and for L vy processes Computation of Greeks is covered using likelihood ratio methods and adjoint techniques A chapter on state of the art optimization algorithms rounds up the toolkit for applying advanced mathematical models to financial problems and the last chapter in this section of the book also serves as an introduction to model risk The third part

is devoted to the usage of Matlab introducing the software package by describing the basic functions applied for financial engineering The programming is approached from an object oriented perspective with examples to propose a framework for calibration hedging and the adjoint method for calculating Greeks in a Libor market model Source code used for producing the results and analysing the models is provided on the author s dedicated website http www mathworks de matlabcentral fileexchange authors 246981 **Large Deviations and Asymptotic Methods in Finance** Peter K. Friz,Jim Gatheral,Archil Gulisashvili,Antoine Jacquier,Josef Teichmann,2015-06-16 Topics covered in this volume large deviations differential geometry asymptotic expansions central limit theorems give a full picture of the current advances in the application of asymptotic methods in mathematical finance and thereby provide rigorous solutions to important mathematical and financial issues such as implied volatility asymptotics local volatility extrapolation systemic risk and volatility estimation This volume gathers together ground breaking results in this field by some of its leading experts Over the past decade asymptotic methods have played an increasingly important role in the study of the behaviour of financial models These methods provide a useful alternative to numerical methods in settings where the latter may lose accuracy in extremes such as small and large strikes and small maturities and lead to a clearer understanding of the behaviour of models and of the influence of parameters on this behaviour Graduate students researchers and practitioners will find this book very useful and the diversity of topics will appeal to people from mathematical finance probability theory and differential geometry **Euro-Par 2015: Parallel Processing Workshops** Sascha Hunold,Alexandru Costan,Domingo Giménez,Alexandru Iosup,Laura Ricci,María Engracia Gómez Requena,Vittorio Scarano,Ana Lucia Varbanescu,Stephen L. Scott,Stefan Lankes,Josef Weidendorfer,Michael Alexander,2015-12-17 This book constitutes the thoroughly refereed post conference proceedings of 12 workshops held at the 21st International Conference on Parallel and Distributed Computing Euro Par 2015 in Vienna Austria in August 2015 The 67 revised full papers presented were carefully reviewed and selected from 121 submissions The volume includes papers from the following workshops BigDataCloud 4th Workshop on Big Data Management in Clouds Euro EDUPAR First European Workshop on Parallel and Distributed Computing Education for Undergraduate Students Hetero Par 13th International Workshop on Algorithms Models and Tools for Parallel Computing on Heterogeneous Platforms LSDVE Third Workshop on Large Scale Distributed Virtual Environments OMHI 4th International Workshop on On chip Memory Hierarchies and Interconnects PADAPS Third Workshop on Parallel and Distributed Agent Based Simulations PELGA Workshop on Performance Engineering for Large Scale Graph Analytics REPPAR Second International Workshop on Reproducibility in Parallel Computing Resilience 8th Workshop on Resiliency in High Performance Computing in Clusters Clouds and Grids ROME Third Workshop on Runtime and Operating Systems for the Many Core Era UCHPC 8th Workshop on UnConventional High Performance Computing and VHPC 10th Workshop on Virtualization in High Performance Cloud Computing **Modeling, Stochastic Control, Optimization, and Applications** George Yin,Qing Zhang,2019-07-16 This

volume collects papers based on invited talks given at the IMA workshop in Modeling Stochastic Control Optimization and Related Applications held at the Institute for Mathematics and Its Applications University of Minnesota during May and June 2018 There were four week long workshops during the conference They are 1 stochastic control computation methods and applications 2 queueing theory and networked systems 3 ecological and biological applications and 4 finance and economics applications For broader impacts researchers from different fields covering both theoretically oriented and application intensive areas were invited to participate in the conference It brought together researchers from multi disciplinary communities in applied mathematics applied probability engineering biology ecology and networked science to review and substantially update most recent progress As an archive this volume presents some of the highlights of the workshops and collect papers covering a broad range of topics **Progress in Industrial Mathematics at ECMI 2016** Peregrina Quintela,Patricia Barral,Dolores Gómez,Francisco J. Pena,Jerónimo Rodríguez,Pilar Salgado,Miguel E. Vázquez-Méndez,2018-03-26 This book addresses mathematics in a wide variety of applications ranging from problems in electronics energy and the environment to mechanics and mechatronics Using the classification system defined in the EU Framework Programme for Research and Innovation H2020 several of the topics covered belong to the challenge climate action environment resource efficiency and raw materials and some to health demographic change and wellbeing while others belong to Europe in a changing world inclusive innovative and reflective societies The 19th European Conference on Mathematics for Industry ECMI2016 was held in Santiago de Compostela Spain in June 2016 The proceedings of this conference include the plenary lectures ECMI awards and special lectures mini symposia including the description of each mini symposium and contributed talks The ECMI conferences are organized by the European Consortium for Mathematics in Industry with the aim of promoting interaction between academy and industry leading to innovation in both fields and providing unique opportunities to discuss the latest ideas problems and methodologies and contributing to the advancement of science and technology They also encourage industrial sectors to propose challenging problems where mathematicians can provide insights and fresh perspectives Lastly the ECMI conferences are one of the main forums in which significant advances in industrial mathematics are presented bringing together prominent figures from business science and academia to promote the use of innovative mathematics in industry   FX Barrier Options Zareer Dadachanji,2016-04-29 Barrier options are a class of highly path dependent exotic options which present particular challenges to practitioners in all areas of the financial industry They are traded heavily as stand alone contracts in the Foreign Exchange FX options market their trading volume being second only to that of vanilla options The FX options industry has correspondingly shown great innovation in this class of products and in the models that are used to value and risk manage them FX structured products commonly include barrier features and in order to analyse the effects that these features have on the overall structured product it is essential first to understand how individual barrier options work and behave FX Barrier Options takes a

quantitative approach to barrier options in FX environments Its primary perspectives are those of quantitative analysts both in the front office and in control functions It presents and explains concepts in a highly intuitive manner throughout to allow quantitatively minded traders structurers marketers salespeople and software engineers to acquire a more rigorous analytical understanding of these products The book derives demonstrates and analyses a wide range of models modelling techniques and numerical algorithms that can be used for constructing valuation models and risk management methods Discussions focus on the practical realities of the market and demonstrate the behaviour of models based on real and recent market data across a range of currency pairs It furthermore offers a clear description of the history and evolution of the different types of barrier options and elucidates a great deal of industry nomenclature and jargon **Financial Mathematics, Derivatives and Structured Products** Raymond H. Chan,Yves ZY. Guo,Spike T. Lee,Xun Li,2024-06-12 This book introduces readers to the financial markets derivatives structured products and how the products are modelled and implemented by practitioners In addition it equips readers with the necessary knowledge of financial markets needed in order to work as product structurers traders sales or risk managers This second edition substantially extends updates and clarifies the previous edition New materials and enhanced contents include but not limited to the role of central counterparties for derivatives transactions the reference rates to replace LIBOR risk neutral modelling for futures and forward discussions and analysis on risk neutral framework and num raires discrete dividend modelling variance reduction techniques for Monte Carlo method finite difference method analysis tree method FX modelling multi name credit derivatives modelling local volatility model forward variance model and local stochastic volatility model to reflect market practice As the book seeks to unify the derivatives modelling and the financial engineering practice in the market it will be of interest to financial practitioners and academic researchers alike The book can also be used as a textbook for the following courses Financial Mathematics undergraduate level Stochastic Modelling in Finance postgraduate level Financial Markets and Derivatives undergraduate level Structured Products and Solutions undergraduate postgraduate level **Recent Advances in Financial Engineering** Akihiko Takahashi,Yukio Muromachi,Hidetaka Nakaoka,2012 This book is the Proceedings of the International Workshop on Finance 2011 held in Kyoto in the summer of 2011 with the aim of exchanging new ideas in financial engineering among researchers from various countries from both academia and industry the workshop was held as a successor to the Daiwa International Workshop 2004 2008 and the KIER TMU International Workshop 2009 2010 This workshop was organized by the Center for Advanced Research in Finance CARF Graduate School of Economics the University of Tokyo and Graduate School of Social Sciences Tokyo Metropolitan University and co organized by Life Risk Research Center Doshisha University The workshop serves as a bridge between academic researchers and practitioners This book contains about fifteen papers all refereed representing the presentations at the workshop the papers address state of the art techniques in financial engineering *Stochastic Processes and Calculus Explained* Vikas Rathi,2025-02-20

Stochastic Processes and Calculus Explained is an essential textbook designed to help readers understand and apply stochastic processes across various fields Written in clear accessible language this book provides a solid foundation in probability theory and calculus while diving into stochastic processes including random variables probability distributions Brownian motion stochastic integration and stochastic differential equations We emphasize the practical relevance of these concepts in finance physics engineering and biology Our guide illustrates how stochastic processes model uncertainty and randomness aiding in informed decision making outcome prediction and complex system analysis With real world examples and exercises we ensure readers can grasp and apply these concepts effectively The book offers a strong mathematical foundation covering key tools and techniques such as probability theory calculus and linear algebra essential for understanding stochastic processes Catering to readers of all backgrounds and expertise levels Stochastic Processes and Calculus Explained is ideal for beginners and experienced practitioners alike Its clear explanations intuitive coverage and comprehensive approach make it an invaluable resource for students researchers and professionals worldwide **How to Implement Market Models Using VBA** Francois Goossens,2015-01-23 Accessible VBA coding for complex financial modelling How to Implement Market Models Using VBA makes solving complex valuation issues accessible to any financial professional with a taste for mathematics With a focus on the clarity of code this practical introductory guide includes chapters on VBA fundamentals and essential mathematical techniques helping readers master the numerical methods to build an algorithm that can be used in a wide range of pricing problems Coverage includes general algorithms vanilla instruments multi asset instruments yield curve models interest rate exotics and more guiding readers thoroughly through pricing in the capital markets area The companion website http implementmodinvba com features additional VBA code and algorithmic techniques and the interactive blog provides a forum for discussion of code with programmers and financial engineers giving readers insight into the different applications and customisations possible for even more advanced problem solving Financial engineers implement models from a mathematical representation of an asset s performance by building a program that performs a valuation of securities based on this asset How to Implement Market Models Using VBA makes this technical process understandable with well explained algorithms VBA code and accessible theoretical explanations Decide which numerical method to use in which scenario Identify the necessary building blocks of an algorithm Write clear functional VBA code for a variety of problems Apply algorithms to different instruments and models Designed for finance professionals this book brings more accurate modelling within reach for anyone with interest in the market For clearer code patient explanation and practical instruction How to Implement Market Models Using VBA is an essential introductory guide *Quantitative Finance* Maria Cristina Mariani,Ionut Florescu,2019-11-06 Presents a multitude of topics relevant to the quantitative finance community by combining the best of the theory with the usefulness of applications Written by accomplished teachers and researchers in the field this book presents quantitative finance theory through applications to

specific practical problems and comes with accompanying coding techniques in R and MATLAB and some generic pseudo algorithms to modern finance It also offers over 300 examples and exercises that are appropriate for the beginning student as well as the practitioner in the field The Quantitative Finance book is divided into four parts Part One begins by providing readers with the theoretical backdrop needed from probability and stochastic processes We also present some useful finance concepts used throughout the book In part two of the book we present the classical Black Scholes Merton model in a uniquely accessible and understandable way Implied volatility as well as local volatility surfaces are also discussed Next solutions to Partial Differential Equations PDE wavelets and Fourier transforms are presented Several methodologies for pricing options namely tree methods finite difference method and Monte Carlo simulation methods are also discussed We conclude this part with a discussion on stochastic differential equations SDE s In the third part of this book several new and advanced models from current literature such as general Lvy processes nonlinear PDE s for stochastic volatility models in a transaction fee market PDE s in a jump diffusion with stochastic volatility models and factor and copulas models are discussed In part four of the book we conclude with a solid presentation of the typical topics in fixed income securities and derivatives We discuss models for pricing bonds market marketable securities credit default swaps CDS and securitizations Classroom tested over a three year period with the input of students and experienced practitioners Emphasizes the volatility of financial analyses and interpretations Weaves theory with application throughout the book Utilizes R and MATLAB software programs Presents pseudo algorithms for readers who do not have access to any particular programming system Supplemented with extensive author maintained web site that includes helpful teaching hints data sets software programs and additional content Quantitative Finance is an ideal textbook for upper undergraduate and beginning graduate students in statistics financial engineering quantitative finance and mathematical finance programs It will also appeal to practitioners in the same fields **Financial Modeling** Stephane Crepey,2013-06-13 Backward stochastic differential equations BSDEs provide a general mathematical framework for solving pricing and risk management questions of financial derivatives They are of growing importance for nonlinear pricing problems such as CVA computations that have been developed since the crisis Although BSDEs are well known to academics they are less familiar to practitioners in the financial industry In order to fill this gap this book revisits financial modeling and computational finance from a BSDE perspective presenting a unified view of the pricing and hedging theory across all asset classes It also contains a review of quantitative finance tools including Fourier techniques Monte Carlo methods finite differences and model calibration schemes With a view to use in graduate courses in computational finance and financial modeling corrected problem sets and Matlab sheets have been provided St phane Cr pey s book starts with a few chapters on classical stochastic processes material and then fasten your seatbelt the author starts traveling backwards in time through backward stochastic differential equations BSDEs This does not mean that one has to read the book backwards like a manga Rather the possibility to move backwards in time even if from a variety of

final scenarios following a probability law opens a multitude of possibilities for all those pricing problems whose solution is not a straightforward expectation For example this allows for framing problems like pricing with credit and funding costs in a rigorous mathematical setup This is as far as I know the first book written for several levels of audiences with applications to financial modeling and using BSDEs as one of the main tools and as the song says it s never as good as the first time Damiano Brigo Chair of Mathematical Finance Imperial College London While the classical theory of arbitrage free pricing has matured and is now well understood and used by the finance industry the theory of BSDEs continues to enjoy a rapid growth and remains a domain restricted to academic researchers and a handful of practitioners Cr pey s book presents this novel approach to a wider community of researchers involved in mathematical modeling in finance It is clearly an essential reference for anyone interested in the latest developments in financial mathematics Marek Musiela Deputy Director of the Oxford Man Institute of Quantitative Finance   **Financial Econometrics** William Johnson,2024-10-15 Financial Econometrics Tools for Quantitative Analysis in Finance serves as a comprehensive guide for understanding complex financial markets through the lens of statistical and econometric principles It is meticulously crafted for both beginners and seasoned professionals seeking to enhance their analytical toolkit The book delves into essential topics such as volatility modeling risk management time series analysis and option pricing models equipping readers with the knowledge to make informed investment decisions Each chapter is structured to build a solid foundation while progressively introducing advanced concepts and practical applications across various financial domains This book stands out by integrating traditional econometric methods with modern advancements such as machine learning and high frequency data analysis Readers will uncover the intricacies of market microstructure portfolio theory and event studies gaining insights that are both academically rigorous and practically applicable Authored with clarity and precision Financial Econometrics transforms complex theories into accessible content empowering readers to harness the power of data driven decision making in the ever evolving financial landscape Whether you re looking to deepen your understanding or implement sophisticated trading strategies this text is an invaluable resource in quantitative finance   Proceedings of the International Workshop on Finance 2011. Doshisha University, Kyoto, Japan. 3-4 August 2011 Akihiko Takahashi,2012-05-21 This book is the Proceedings of the International Workshop on Finance 2011 held in Kyoto in the summer of 2011 with the aim of exchanging new ideas in financial engineering among researchers from various countries from both academia and industry The workshop was held as a successor to the Daiwa International Workshop 2004OCo2008 and the KIER TMU International Workshop 2009OCo2010 This workshop was organized by the Center for Advanced Research in Finance CARF Graduate School of Economics the University of Tokyo and Graduate School of Social Sciences Tokyo Metropolitan University OCo and co organized by Life Risk Research Center Doshisha University The workshop serves as a bridge between academic researchers and practitioners This book contains about fifteen papers all refereed representing the presentations at the workshop The

papers address state of the art techniques in financial engineering **The Complete Guide to Option Pricing Formulas** Espen Gaarder Haug,2007-01-08 Accompanying CD ROM contains all pricing formulas with VBA code and ready to use Excel spreadsheets and 3D charts for Greeks or Option Sensitivities Jacket *Smile Pricing Explained* P. Austing,2014-08-29 Smile Pricing Explained provides a clear and thorough explanation of the concepts of smile modelling that are at the forefront of modern derivatives pricing The key models used in practice are covered together with numerical techniques and calibration *Manufacturing and Managing Customer-Driven Derivatives* Dong Qu,2016-03-21 Manufacturing and Managing Customer Driven Derivatives Manufacturing and Managing Customer Driven Derivatives sheds light on customer driven derivative products and their manufacturing process which can prove a complicated topic for even experienced financial practitioners This authoritative text offers up to date knowledge and practices across a broad range of topics that address the entire manufacturing pricing and risk management process including practical knowledge and industrial best practices This resource blends quantitative and business perspectives to provide an in depth understanding of the derivative risk management skills that are necessary to adopt in the competitive financial industry Manufacturing and managing customer driven derivative products have become more complex due to macro factors such as the multi curve environments triggered by the recent financial crises stricter regulatory requirements of consistent modelling and managing frameworks and the need for risk reward optimisation Explore the fundamental components of the derivatives business including equity derivatives interest rates derivatives real estate derivatives and real life derivatives etc Examine the life cycle of manufacturing derivative products and practical pricing models Deep dive into a wide range of customer driven structured derivative products their investment or hedging payoff features and associated risk exposures Examine the implications of changing regulatory standards which can increase costs in the banking sector Discover practical yet sophisticated product analysis quantitative modeling infrastructure integration risk analysis and hedging analysis Gain insight on how banks should handle complex derivatives products Manufacturing and Managing Customer Driven Derivatives is an essential guide for quants structurers derivatives traders risk managers business executives insurance industry professionals hedge fund managers academic lecturers and financial math students who are interested in looking at the bigger picture of the manufacturing pricing and risk management process of customer driven derivative transactions **FX Options and Smile Risk** Antonio Castagna,2010-02-12 The FX options market represents one of the most liquid and strongly competitive markets in the world and features many technical subtleties that can seriously harm the uninformed and unaware trader This book is a unique guide to running an FX options book from the market maker perspective Striking a balance between mathematical rigour and market practice and written by experienced practitioner Antonio Castagna the book shows readers how to correctly build an entire volatility surface from the market prices of the main structures Starting with the basic conventions related to the main FX deals and the basic traded structures of FX options the book gradually introduces the

main tools to cope with the FX volatility risk It then goes on to review the main concepts of option pricing theory and their application within a Black Scholes economy and a stochastic volatility environment The book also introduces models that can be implemented to price and manage FX options before examining the effects of volatility on the profits and losses arising from the hedging activity Coverage includes how the Black Scholes model is used in professional trading activity the most suitable stochastic volatility models sources of profit and loss from the Delta and volatility hedging activity fundamental concepts of smile hedging major market approaches and variations of the Vanna Volga method volatility related Greeks in the Black Scholes model pricing of plain vanilla options digital options barrier options and the less well known exotic options tools for monitoring the main risks of an FX options book The book is accompanied by a CD Rom featuring models in VBA demonstrating many of the approaches described in the book   **Soft Computing in Data Analytics** Janmenjoy Nayak,Ajith Abraham,B. Murali Krishna,G. T. Chandra Sekhar,Asit Kumar Das,2018-08-21 The volume contains original research findings exchange of ideas and dissemination of innovative practical development experiences in different fields of soft and advance computing It provides insights into the International Conference on Soft Computing in Data Analytics SCDA It also concentrates on both theory and practices from around the world in all the areas of related disciplines of soft computing The book provides rapid dissemination of important results in soft computing technologies a fusion of research in fuzzy logic evolutionary computations neural science and neural network systems and chaos theory and chaotic systems swarm based algorithms etc The book aims to cater the postgraduate students and researchers working in the discipline of computer science and engineering along with other engineering branches

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