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Theory of Plasticity Cerebral Plasticity Plasticity Thermally Activated Mechanisms in Crystal Plasticity Soft-wired Soft-wired Advances in Engineering Plasticity and Its Applications Translational Research in Traumatic Brain Injury Cyclic Plasticity of Metals Plasticity in Sensory Systems Neural Development and Plasticity Plasticity Phenotypic Plasticity & Evolution Synaptic Plasticity Developmental Plasticity and Evolution Non-Invasive Brain Stimulation: New Prospects in Cognitive Neurorehabilitation Plasticity and Textures Continuum Theory of Plasticity The Neurosciences and Music III Plasticity Theory Brain Plasticity and Learning Dynamic Plasticity Applied Plasticity Plasticity of Metallic Materials Advances in Computational Plasticity Neuroplasticity Maternal Brain Plasticity: Preclinical and Human Research and Implications for Intervention Plasticity of the Auditory System Phenotypic Plasticity Phenotypic Plasticity & Evolution Fundamental Consequences of a New Intrinsic Time Measure Neural Plasticity and Cognitive Development Theory of Cortical Plasticity Modern Approaches to Plasticity Art and the Brain The Rewiring Brain Elasticity and Plasticity of Large Deformations Neural Plasticity in Adult Somatic Sensory-Motor Systems The Plastic Turn Neural Plasticity in Rehabilitation and Psychotherapy

Theory of Plasticity

2012-12-02

plasticity is concerned with the mechanics of materials deformed beyond their elastic limit a strong knowledge of plasticity is essential for engineers dealing with a wide range of engineering problems such as those encountered in the forming of metals the design of pressure vessels the mechanics of impact civil and structural engineering as well as the understanding of fatigue and the economical design of structures theory of plasticity is the most comprehensive reference on the subject as well as the most up to date no other significant plasticity reference has been published recently making this of great interest to academics and professionals this new edition presents extensive new material on the use of computational methods plus coverage of important developments in cyclic plasticity and soil plasticity a complete plasticity reference for graduate students researchers and practicing engineers no other book offers such an up to date or comprehensive reference on this key continuum mechanics subject updates with new material on computational analysis and applications new end of chapter exercises plasticity is a key subject in all mechanical engineering disciplines as well as in manufacturing engineering and civil engineering chakrabarty is one of the subject s leading figures

Cerebral Plasticity

2011-05-20

a survey of the latest research covering such topics as plasticity in the adult brain and the underlying mechanisms of plasticity the notion that neurons in the living brain can change in response to experience a phenomenon known as plasticity has become a major conceptual issue in neuroscience research as well as a practical focus for the fields of neural rehabilitation and neurodegenerative disease early work dealt with the plasticity of the developing brain and demonstrated the critical role played by sensory experience in normal development two broader themes have emerged in recent studies the plasticity of the adult brain one of the most rapidly developing areas of current research and the search for the underlying mechanisms of plasticity explanations for the cellular molecular and epigenetic factors controlling plasticity many scientists believe that achieving a fundamental understanding of what underlies neuronal plasticity could help us treat neurological disorders and even improve the learning capabilities of the human brain this volume offers contributions from leaders in the field that cover all three approaches to the study of cerebral plasticity chapters treat normal development and the influences of environmental manipulations cerebral plasticity in adulthood and underlying mechanisms of plasticity other chapters deal with plastic changes in neurological conditions and with the enhancement of plasticity as a strategy for brain repair

Plasticity

2012-11-19

this book focuses on the theoretical aspects of small strain theory of elastoplasticity with hardening assumptions it provides a comprehensive and unified treatment of the mathematical theory and numerical analysis it is divided into three parts with the first part providing a detailed introduction to plasticity the second part covering the mathematical analysis of the elasticity problem and the third part devoted to error analysis of various semi discrete and fully discrete approximations for variational formulations of the elastoplasticity this revised and expanded edition includes material on single crystal and strain gradient plasticity in addition the entire book has been revised to make it more accessible to readers who are actively involved in computations but less so in numerical analysis reviews of earlier edition the authors have written an excellent book which can be recommended for specialists in plasticity who wish to know more about the mathematical theory as well as those with a background in the mathematical sciences who seek a self contained account of the mechanics and mathematics of plasticity theory zamm 2002 in summary the book represents an impressive comprehensive overview of the mathematical approach to the theory and numerics of plasticity scientists as well as lecturers and graduate students will find the book very useful as a reference for research or for preparing courses in this field technische mechanik the book is professionally written and will be a useful reference to researchers and students interested in mathematical and numerical problems of plasticity it represents a major contribution in the area of continuum mechanics and numerical analysis math reviews

Thermally Activated Mechanisms in Crystal Plasticity

2003-09-08

key features a unified fundamental and quantitative resource the result of 5 years of investigation from researchers around the world new data from a range of new techniques including synchrotron radiation x ray topography provide safer and surer methods of identifying deformation mechanisms informing the future direction of research in intermediate and high temperature processes by providing original treatment of dislocation climb description thermally activated mechanisms in crystal plasticity is a unified quantitative and fundamental resource for material scientists investigating the strength of metallic materials of various structures at extreme temperatures crystal plasticity is usually controlled by a limited number of elementary dislocation mechanisms even in complex structures those which determine dislocation mobility and how it changes under the influence of stress and temperature are of key importance for understanding and predicting the strength of materials the authors describe in a consistent way a variety of thermally activated microscopic mechanisms of dislocation mobility in a range of crystals the principles of the mechanisms and equations of dislocation motion are revisited and new ones are proposed these describe mostly friction forces on dislocations such as the lattice resistance to glide or those due to sessile cores as well as dislocation cross slip and climb they are critically assessed by comparison with the best available experimental results of microstructural characterization in situ straining experiments under an electron or a synchrotron beam as well as accurate transient mechanical tests such as stress relaxation experiments some recent attempts at atomistic modeling of dislocation cores under stress and temperature are also considered since they offer a complementary description of core transformations and

associated energy barriers in addition to offering guidance and assistance for further experimentation the book indicates new ways to extend the body of data in particular areas such as lattice resistance to glide

Soft-wired

2013

what if you had the power to change your brain for the better in soft wired dr michael merzenich a world authority on brain plasticity explains how the brain rewires itself across the lifespan and how you can take control of that process to improve your life in addition to fascinating descriptions of how your brain has produced your unique memories skills quirks and emotions soft wired offers sound advice for evaluating your brain and gives clear specific scientifically proven guidance for how to rejuvenate remodel and reshape your brain to improve it at any age

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Advances in Engineering Plasticity and Its Applications

1993

classical plasticity is a well established domain of mechanics and engineering providing the basis for many engineering structural design manufacturing processes and natural phenomena new important characteristics are emerging in the interdisciplinary approach of micro meso and macro mechanics and through analysis experiments and computation the interaction of mechanics and materials scientists is introducing tremendous changes in the two disciplines so that the possibility of materials being processed on the microscale to achieve the desired macroscopic properties is rapidly approaching a comprehensive overview on the latest developments in both macroplasticity and microplasticity theories their interactions and applications in various engineering disciplines such as solid mechanics structural analysis and geo mechanics materials science and technology and metal forming and machining is given in this volume case studies written by international experts focus on aspects such as the applications of plasticity in interdisciplinary and non conventional areas the 150 papers provide a current and useful reference source on the latest advances for both research workers and

engineers in the various fields of plasticity

Translational Research in Traumatic Brain Injury

2015-12-01

traumatic brain injury tbi remains a significant source of death and permanent disability contributing to nearly one third of all injury related deaths in the united states and exacting a profound personal and economic toll despite the increased resources that have recently been brought to bear to improve our understanding of tbi the development of new diagnostic and therapeutic approaches has been disappointingly slow translational research in traumatic brain injury attempts to integrate expertise from across specialties to address knowledge gaps in the field of tbi its chapters cover a wide scope of tbi research in five broad areas epidemiology pathophysiology diagnosis current treatment strategies and sequelae future therapies specific topics discussed include the societal impact of tbi in both the civilian and military populations neurobiology and molecular mechanisms of axonal and neuronal injury biomarkers of traumatic brain injury and their relationship to pathology neuroplasticity after tbi neuroprotective and neurorestorative therapy advanced neuroimaging of mild tbi neurocognitive and psychiatric symptoms following mild tbi sports related tbi epilepsy and ptsd following tbi and more the book integrates the perspectives of experts across disciplines to assist in the translation of new ideas to clinical practice and ultimately to improve the care of the brain injured patient

Cyclic Plasticity of Metals

2021-11-11

cyclic plasticity of metals modeling fundamentals and applications provides an exhaustive overview of the fundamentals and applications of various cyclic plasticity models including forming and spring back notch analysis fatigue life prediction and more covering metals with an array of different structures such as hexagonal close packed hcp face centered cubic fcc and body centered cubic bcc the book starts with an introduction to experimental macroscopic and microscopic observations of cyclic plasticity and then segues into a discussion of the fundamentals of the different cyclic plasticity models covering topics such as kinematics stress and strain tensors elasticity plastic flow rule and an array of other concepts a review of the available models follows and the book concludes with chapters covering finite element implementation and industrial applications of the various models reviews constitutive cyclic plasticity models for various metals and alloys with different cell structures cubic hexagonal and more allowing for more accurate evaluation of a component s performance under loading provides real world industrial context by demonstrating applications of cyclic plasticity models in the analysis of engineering components overview of latest models allows researchers to extend available models or develop new ones for analysis of an array of metals under more complex loading conditions

Plasticity in Sensory Systems

2013

this broad exploration of research in plasticity in sensory systems focuses on visual and auditory systems topics include visual and visuomotor learning sensory adaptations as a result of visual loss in childhood plasticity in the adult visual system plasticity across the senses and new techniques in vision recovery rehabilitation and sensory substitution

Neural Development and Plasticity

1996

this progress in brain research volume is the outgrowth of a symposium entitled neural development and plasticity which was held in new orleans louisiana the reader will find substantial new information about the mechanisms underlying growth cone dynamics about molecules involved in axon outgrowth and cell adhesion the role of proteoglycans and glial factors in directing or confirming axons to their appropriate targets and the role of myelin associated growth inhibitors the book will contribute new ideas and identifies new questions of primary importance to developmental neurobiology

Plasticity

2014-10-23

explores the principles of plasticity most undergraduate programs lack an undergraduate plasticity theory course and many graduate programs in design and manufacturing lack a course on plasticity leaving a number of engineering students without adequate information on the subject emphasizing stresses generated in the material and its effect plasticity fundamentals and applications effectively addresses this need this book fills a void by introducing the basic fundamentals of solid mechanics of deformable bodies it provides a thorough understanding of plasticity theory introduces the concepts of plasticity and discusses relevant applications studies the effects of forces and motions on solids the authors make a point of highlighting the importance of plastic deformation and also discuss the concepts of elasticity for a clear understanding of plasticity the elasticity theory must also be understood in addition they present information on updated lagrangian and eulerian formulations for the modeling of metal forming and machining topics covered include stress strain constitutive relations fracture anisotropy contact problems plasticity fundamentals and applications enables students to understand the basic fundamentals of plasticity theory effectively use commercial finite element fe software and eventually develop their own code it also provides suitable reference material for mechanical civil aerospace engineers material processing engineers applied mechanics researchers mathematicians and other industry professionals

Phenotypic Plasticity & Evolution

2021-05-31

phenotypic plasticity the ability of an individual organism to alter its features in direct response to a change in its environment is ubiquitous understanding how and why this phenomenon exists is crucial because it unites all levels of biological inquiry this book brings together researchers who approach plasticity from diverse perspectives to explore new ideas and recent findings about the causes and consequences of plasticity contributors also discuss such controversial topics as how plasticity shapes ecological and evolutionary processes whether specific plastic responses can be passed to offspring and whether plasticity has left an important imprint on the history of life importantly each chapter highlights key questions for future research drawing on numerous studies of plasticity in natural populations of plants and animals this book aims to foster greater appreciation for this important but frequently misunderstood phenomenon key features written in an accessible style with numerous illustrations including many in color reviews the history of the study of plasticity including darwin s views most chapters conclude with recommendations for future research

Synaptic Plasticity

2008-09

synaptic plasticity is the ability of the connection or synapse between two neurons to change in strength there are several underlying mechanisms that co operate to achieve synaptic plasticity including changes in the quantity of neurotransmitter released into a synapse and changes in how effectively cells respond to those neurotransmitters since memories are postulated to be represented by vastly interconnected networks of synapses in the brain synaptic plasticity is one of the important neurochemical foundations of learning and memory in this book the discussion of synaptic plasticity that effects both physical and mental behaviour of organisms is discussed including as the physical performance of an organism that resulted in a stroke drug addiction or the mechanisms of brain plasticity that forms mental disorders such as depression

Developmental Plasticity and Evolution

2003-03-13

the first comprehensive synthesis on development and evolution it applies to all aspects of development at all levels of organization and in all organisms taking advantage of modern findings on behavior genetics endocrinology molecular biology evolutionary theory and phylogenetics to show the connections between developmental mechanisms and evolutionary change this book solves key problems that have impeded a definitive synthesis in the past it uses new concepts and specific examples to show how to relate environmentally sensitive development to the genetic theory of adaptive evolution and to explain major patterns of

change in this book development includes not only embryology and the ontogeny of morphology sometimes portrayed inadequately as governed by regulatory genes but also behavioral development and physiological adaptation where plasticity is mediated by genetically complex mechanisms like hormones and learning the book shows how the universal qualities of phenotypes modular organization and plasticity facilitate both integration and change here you will learn why it is wrong to describe organisms as genetically programmed why environmental induction is likely to be more important in evolution than random mutation and why it is crucial to consider both selection and developmental mechanism in explanations of adaptive evolution this book satisfies the need for a truly general book on development plasticity and evolution that applies to living organisms in all of their life stages and environments using an immense compendium of examples on many kinds of organisms from viruses and bacteria to higher plants and animals it shows how the phenotype is reorganized during evolution to produce novelties and how alternative phenotypes occupy a pivotal role as a phase of evolution that fosters diversification and speeds change the arguments of this book call for a new view of the major themes of evolutionary biology as shown in chapters on gradualism homology environmental induction speciation radiation macroevolution punctuation and the maintenance of sex no other treatment of development and evolution since darwin s offers such a comprehensive and critical discussion of the relevant issues developmental plasticity and evolution is designed for biologists interested in the development and evolution of behavior life history patterns ecology physiology morphology and speciation it will also appeal to evolutionary paleontologists anthropologists psychologists and teachers of general biology

Non-Invasive Brain Stimulation: New Prospects in Cognitive Neurorehabilitation

2012-12-06

cognitive deficits are a common consequence of neurological disease and there is evidence that specific cognitive training may be effective in rehabilitation behavioural dysfunction following neurological disease constitutes one of the major causes of disability worldwide exerts a major impact on the daily life of affected individuals and their families also with a financial burden both for patients and the society in general therefore the adequate treatment of cognitive dysfunction is a much relevant issue with social and economical implications over and above the neuropsychological problem per se several investigations emphasise the fact that interacting with neural activity by means of cortical stimulation can affect cognitive performance a number of studies have reported enhanced performance in specific cognitive tasks in patients with several types of neurological disease after receiving non invasive brain stimulation nibs to specific cortical areas namely transcranial magnetic stimulation and transcranial electrical stimulation in general the evidence highlights the possibility of inducing changes in cortical excitability which in turn may lead to a plastic reorganization of dysfunctional networks responsible for the impaired cognitive functions despite these advances a number of important questions remain open regarding the use of stimulation techniques in cognitive rehabilitation this special issue puts together international leading experts in the field to review and discuss

recent advances as to whether nibs techniques alone or combined with behavioural cognitive rehabilitation can lead to performance enhancements and why the issue is timely and promises to have a huge impact across many domains of clinical and basic neuroscience

Plasticity and Textures

2001-12-31

this book unifies for the first time in book form the main concepts of the physical and mathematical theory of plasticity it presents the foundations of modern anisotropic plasticity which link microscopic observations of texture formation with macroscopic properties of plastically anisotropic materials progress in metal forming technologies has created the necessity to express the plastic yield process in terms of mathematics in order to apply computer methods in addition new materials used in structural elements require a more detailed description of their physical structure amongst both metallurgists and mechanical designers a strong tendency exists to formulate the scientific material in a common language this book meets this request although it has no ambitions to summarise the existing state of knowledge only to combine the mathematical and physical approaches the book is mainly addressed to mechanical designers it is written for researchers who have a knowledge of physics and who want a mathematical tool for using this knowledge for a better description of technological processes moreover it will interest metallurgists who want to have a more general view of their field of research as well as for mechanical and civil engineers who want to apply some microstructural knowledge in their work it could also be useful for graduate students at post doctorate level who want to enter the field of plastic deformation of polycrystalline metals with texture

Continuum Theory of Plasticity

1995-02-28

the only modern up to date introduction to plasticity despite phenomenal progress in plasticity research over the past fifty years introductory books on plasticity have changed very little to meet the need for an up to date introduction to the field akhtar s khan and sujian huang have written continuum theory of plasticity a truly modern text which offers a continuum mechanics approach as well as a lucid presentation of the essential classical contributions the early chapters give the reader a review of elementary concepts of plasticity the necessary background material on continuum mechanics and a discussion of the classical theory of plasticity recent developments in the field are then explored in sections on the mroz multisurface model the dafalias and popov two surface model the non linear kinematic hardening model the endochronic theory of plasticity and numerous topics in finite deformation plasticity theory and strain space formulation for plastic deformation final chapters introduce the fundamentals of the micromechanics of plastic deformation and the analytical coupling between deformation of individual crystals and macroscopic material response of the polycrystal

aggregate for graduate students and researchers in engineering mechanics mechanical civil and aerospace engineering continuum theory of plasticity offers a modern comprehensive introduction to the entire subject of plasticity

The Neurosciences and Music III

2009-09

this volume will be of particular interest to medical professionals neuroscientists neurologists psychologists educators music therapists musicologists sound engineers computer scientists manuscripts address how the tools of cognitive neuroscience have provided new insights into where and how rhythm is coded in the brain production and perception abilities and the relationship between the two the use of music as a tool for the investigation of human cognition and its underlying brain mechanisms recent research investigating various aspects of musical memory and learning and implications for medical rehabilitation for patients with memory disorders advances in the fields of developmental auditory neuroscience empirical music aesthetics and music emotions in normal and disordered development such as autistic spectrum disorders mutual interactions between music and language in children and adults with cochlear implants and human communication of information ideas and emotional states and the shared networks of speech and motor processing with musical processing nyas site

Plasticity Theory

2013-04-22

the aim of plasticity theory is to provide a comprehensive introduction to the contemporary state of knowledge in basic plasticity theory and to its applications it treats several areas not commonly found between the covers of a single book the physics of plasticity constitutive theory dynamic plasticity large deformation plasticity and numerical methods in addition to a representative survey of problems treated by classical methods such as elastic plastic problems plane plastic flow and limit analysis the problem discussed come from areas of interest to mechanical structural and geotechnical engineers metallurgists and others the necessary mathematics and basic mechanics and thermodynamics are covered in an introductory chapter making the book a self contained text suitable for advanced undergraduates and graduate students as well as a reference for practitioners of solid mechanics

Brain Plasticity and Learning

2021-11-08

this book synthesizes the latest findings on neuroplasticity and learning drawing on rich phenomenological research carried out with teachers psychologists parents and students from around the world to examine the implications for current teaching and for the advancement of

learning methods building on the author s previous work in this area the volume considers in depth the function of feelings and emotions in neuroplastic cognition and provides an analysis of curriculum debates and assessment systems in the light of neuroplasticity the final chapters explore the implications of brain plasticity outside of structured learning environments and in society at large the book will appeal to students and scholars of psychology and education as well as to educational psychologists coaches teachers and educational leaders

Dynamic Plasticity

2013-03-09

mechanical engineering an engineering discipline forged and shaped by the needs of the industrial revolution is once again asked to do its substantial share in the call for industrial renewal the general call is urgent as we face profound issues of productivity and competitiveness that require engineering solutions among others the mechanical engineering series features graduate texts and research monographs intended to address the need for information in contemporary areas of mechanical engineering the series is conceived as a comprehensive one that covers a broad range of c centrations important to mechanical engineering graduate education and research we are fortunate to have a distinguished roster of consulting editors on the ad sory board each an expert in one of the areas of concentration the names of the consulting editors are listed on the facing page of this volume the areas of conc tration are applied mechanics biomechanics computational mechanics dynamic systems and control energetics mechanics of materials processing production systems thermal science and tribology

Applied Plasticity

2020-11-23

plasticity of metallic materials presents a rigorous framework for description of plasticity phenomena classic and recent models for isotropic and anisotropic materials new original analytical solutions to various elastic plastic boundary value problems and new interpretations of mechanical data based on these recent models the book covers models for metals with both cubic and hexagonal crystal structures presents the mechanical tests required to determine the model parameters various identification procedures verification and validation tests and numerous applications to metal forming outlines latest research on plastic anisotropy and its role in metal forming presents characterization and validation tests for metals with various crystal structures compares the predictive capabilities of various models for a variety of loadings

Plasticity of Metallic Materials

2017-09-09

this book brings together some 20 chapters on state of the art research in the broad field of computational plasticity with applications in civil and mechanical engineering metal forming processes geomechanics nonlinear structural analysis composites biomechanics and multi scale analysis of materials among others the chapters are written by world leaders in the different fields of computational plasticity

Advances in Computational Plasticity

2012-02-02

new research into neuroplasticity is a fascinating new research angle that could lead to improvements in therapy for the depressive disorders in this volume researchers in the field contribute chapters examining different aspects of this phenomenon figures and tables help explain complicated concepts this book provides a new angle on the treatment of depressive disorders

Neuroplasticity

2016-09-19

the transition to motherhood is marked by significant change at both biological and psychological levels facilitating the development of maternal behavior interdisciplinary research converge to highlight the plasticity of the maternal brain and the interplay of neurophysiology and postpartum experience in shaping maternal brain and behavior in this issue new directions on the topic of the plasticity of the maternal brain is discussed by internationally renowned experts taking a lifespan developmental and crossspecies perspective it highlights biological and environmental influences including neuroendocrine events around parturition and offspring interactions in shaping maternal brain plasticity this issue highlights the importance of maternal periods of neural plasticity as optimal temporal windows for targeted interventions in families to foster maternal behavior and child development this provides a unique opportunity to synergistically bring together research scientists with clinical teams that routinely work with mothers and their children to support and prosper the dyadic relationship through innovative translational research programs this is the 153rd volume in this jossey bass series new directions for child and adolescent development its mission is to provide scientific and scholarly presentations on cutting edge issues and concepts in this subject area each volume focuses on a specific new direction or research topic and is edited by experts from that field

Maternal Brain Plasticity: Preclinical and Human Research and Implications for Intervention

2013-03-09

the auditory system has a remarkable ability to adjust to an ever changing environment the six

review chapters that comprise plasticity of the central auditory system cover a spectrum of issues concerning this ability to adapt defined by the widely applicable term plasticity with chapters focusing on the development of the cochlear nucleus the mammalian superior olivary complex plasticity in binaural hearing plasticity in the auditory cortex neural plasticity in bird songs and plasticity in the insect auditory system this volume represents much of the most current research in this field the volume is thorough enough to stand alone but is closely related a previous shar volume development of the auditory system volume 9 by rubel popper and fay the book fully addresses the difficulties challenges and complexities of this topic as it applies to the auditory development of a wide variety of species

Plasticity of the Auditory System

2001-08-17

the author begins by defining phenotypic plasticity and detailing its history including important experiments and methods of statistical and graphical analysis he then provides extended examples and discussion of the molecular basis of plasticity the plasticity of development the ecology of plastic responses and the role of costs and constraints in the evolution of plasticity a brief epilogue looks at how plasticity studies shed light on the nature nurture debate in the popular media

Phenotypic Plasticity

2021-05-31

phenotypic plasticity the ability of an individual organism to alter its features in direct response to a change in its environment is ubiquitous understanding how and why this phenomenon exists is crucial because it unites all levels of biological inquiry this book brings together researchers who approach plasticity from diverse perspectives to explore new ideas and recent findings about the causes and consequences of plasticity contributors also discuss such controversial topics as how plasticity shapes ecological and evolutionary processes whether specific plastic responses can be passed to offspring and whether plasticity has left an important imprint on the history of life importantly each chapter highlights key questions for future research drawing on numerous studies of plasticity in natural populations of plants and animals this book aims to foster greater appreciation for this important but frequently misunderstood phenomenon key features written in an accessible style with numerous illustrations including many in color reviews the history of the study of plasticity including darwin s views most chapters conclude with recommendations for future research

Phenotypic Plasticity & Evolution

1978

this title addresses fundamental questions about human brain development through the study of children with early occurring focal brain injury

Fundamental Consequences of a New Intrinsic Time Measure

2012-05-29

this invaluable book presents a theory of cortical plasticity and shows how this theory leads to experiments that test both its assumptions and consequences it elucidates in a manner that is accessible to students as well as researchers the role which the bcm theory has played in guiding research and suggesting experiments that have led to our present understanding of the mechanisms underlying cortical plasticity most of the connections between theory and experiment that are discussed require complex simulations a unique feature of the book is the accompanying software package plasticity this is provided complete with source code and enables the reader to repeat any of the simulations quoted in the book as well as to vary either parameters or assumptions plasticity is thus a research and an educational tool readers can use it to obtain hands on knowledge of the structure of bcm and various other learning algorithms they can check and replicate our results as well as test algorithms andrefinements of their own

Neural Plasticity and Cognitive Development

2004

constitutive modelling of granulate materials has achieved significant progress in recent times although some challenging problems still remain to be solved many of the 35 contributions in this volume are devoted to modelling but there are also papers investigating the phenomena to be modelled for instance there are reviews on several aspects of the behaviour of granulates which are mere material properties while other aspects are related to the ill posedness of the corresponding boundary value problems the work provides a comprehensive and up to date treatise on the theory of plasticity in granular materials together with a great number of solution methods and applications the volume is intended for researchers and practising engineers who wish to enhance their knowledge in this rapidly expanding field

Theory of Cortical Plasticity

2012-12-02

in her new book art and the brain plasticity embodiment and the unclosed circle amy ione offers a profound assessment of our ever evolving view of the biological brain as it pertains to embodied human experience

Modern Approaches to Plasticity

2016-10-11

the adult brain is not as hard wired as traditionally thought by modifying their small or large scale morphology neurons can make new synaptic connections or break existing ones structural plasticity structural changes accompany memory formation and learning and are induced by neurogenesis neurodegeneration and brain injury such as stroke exploring the role of structural plasticity in the brain can be greatly assisted by mathematical and computational models as they enable us to bridge the gap between system level dynamics and lower level cellular and molecular processes however most traditional neural network models have fixed neuronal morphologies and a static connectivity pattern with plasticity merely arising from changes in the strength of existing synapses synaptic plasticity in the rewiring brain the editors bring together for the first time contemporary modeling studies that investigate the implications of structural plasticity for brain function and pathology starting with an experimental background on structural plasticity in the adult brain the book covers computational studies on homeostatic structural plasticity the impact of structural plasticity on cognition and cortical connectivity the interaction between synaptic and structural plasticity neurogenesis related structural plasticity and structural plasticity in neurological disorders structural plasticity adds a whole new dimension to brain plasticity and the rewiring brain shows how computational approaches may help to gain a better understanding of the full adaptive potential of the adult brain the book is written for both computational and experimental neuroscientists reviews the current state of knowledge of structural plasticity in the adult brain gives a comprehensive overview of computational studies on structural plasticity provides insights into the potential driving forces of structural plasticity and the functional implications of structural plasticity for learning and memory serves as inspiration for developing novel treatment strategies for stimulating functional repair after brain damage

Art and the Brain

2017-06-23

this book presents an introduction to material theory and in particular to elasticity plasticity and viscoelasticity to bring the reader close to the frontiers of today s knowledge in these particular fields it starts right from the beginning without assuming much knowledge of the subject hence the book is generally comprehensible to all engineers physicists mathematicians and others at the beginning of each new section a brief comment on the literature contains recommendations for further reading this book includes an updated reference list and over 100 changes throughout the book it contains the latest knowledge on the subject two new chapters have been added in this new edition now finite viscoelasticity is included and an essay on gradient materials which have recently drawn much attention

The Rewiring Brain

2021-04-07

synthesizing current information about sensory motor plasticity neural plasticity in adult somatic sensory motor systems provides an up to date description of the dynamic processes that occur in somatic sensory motor cortical circuits or somatic sensory pathways to the cortex due to experience learning or damage to the nervous system the book emphasizes changes in the cortex that are linked to shifts in movement or behavior and demonstrates the potential for direct brain based interventions to improve the quality of life for people with sensory motor disabilities following initial chapters that cover issues relevant to modifications in sensory processing the text deals with the motor side of sensory motor transformations and includes studies that document the dynamic changes in system properties that occur with normal experience or in recovery from brain damage edited by a recognized world authority on neural plasticity this book provides important insight into the mechanisms of neural plasticity it is an essential link to understanding the dynamics of learning in the hopes of improving perceptual and motor skills after brain damage

Elasticity and Plasticity of Large Deformations

2005-05-26

the plastic turn offers a novel way of looking at plastic as the defining material of our age and at the plasticity of plastic as an innovative means of understanding the arts and literature ranjan ghosh terms this approach the material aesthetic and through this concept traces the emergence and development of plastic polymers along the same historical trajectory as literary modernism plastic s growth as a product in the culture industry its formation through multiple application and chemical syntheses and its circulation via oceanic movements ghosh argues correspond with and offers novel insights into developments in modernist literature and critical theory through innovative readings of canonical modernist texts analyses of art works and accounts of plastic s devastating environmental impact the plastic turn proposes plastic s unique properties and destructive ubiquity as a theory machine to explain literature and life in the anthropocene introducing several new concepts like plastic literature plastic literary etc into critical humanist discourse ghosh enmeshes literature and theory materiality and philosophy history and ecology to explore why plastic as a substance and as an idea intrigues disturbs and haunts us

Neural Plasticity in Adult Somatic Sensory-Motor Systems

2022-11-15

the brain continuously adapts its structures and functions tochanges in its environment in a

process called neuralplasticity research indicates that psychotherapy andrehabilitation are only effective when they induce such neuralplasticity here leading experts discuss the most recentresearch on training and therapy induced brain plasticity

The Plastic Turn

2016

Neural Plasticity in Rehabilitation and Psychotherapy

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