



ideas to the software optimization domain. It illustrates methodological and practical contributions that advance the state of the art for performance profiling techniques and adaptive runtime designs, backed by promising experimental results on industrial-strength benchmarks. Part of the results has been presented in flagship programming language venues.

The genetic, molecular, and cellular mechanisms of neural development are essential for understanding evolution and disorders of neural systems. Recent advances in genetic, molecular, and cell biological methods have generated a massive increase in new information, but there is a paucity of comprehensive and up-to-date syntheses, references, and historical perspectives on this important subject. The Comprehensive Developmental Neuroscience series is designed to fill this gap, offering the most thorough coverage of this field on the market today and addressing all aspects of how the nervous system and its components develop. Particular attention is paid to the effects of abnormal development and on new psychiatric/neurological treatments being developed based on our increased understanding of developmental mechanisms. Each volume in the series consists of review style articles that average 15-20pp and feature numerous illustrations and full references. Volume 3 offers 40 high level articles devoted mainly to anatomical and functional development of neural circuits and neural systems, as well as those that address neurodevelopmental disorders in humans and experimental organisms. Series offers 144 articles for 2904 full color pages addressing ways in which the nervous system and its components develop Features leading experts in various subfields as Section Editors and article Authors All articles peer reviewed by Section Editors to ensure accuracy, thoroughness, and scholarship Volume 3 sections include coverage of: mechanisms that control the assembly of neural circuits in specific regions of the nervous system, multiple aspects of cognitive development, and disorders of the nervous system arising through defects in neural development

Complex system theory is rapidly developing and gaining importance, providing tools and concepts central to our modern understanding of emergent phenomena. This primer offers an introduction to this area together with detailed coverage of the mathematics involved. All calculations are presented step by step and are straightforward to follow. This new third edition comes with new material, figures and exercises. Network theory, dynamical systems and information theory, the core of modern complex system sciences, are developed in the first three chapters, covering basic concepts and phenomena like small-world networks, bifurcation theory and information entropy. Further chapters use a modular approach to address the most important concepts in complex system sciences, with the emergence and self-organization playing a central role. Prominent examples are self-organized criticality in adaptive systems, life at the edge of chaos, hypercycles and coevolutionary avalanches, synchronization phenomena, absorbing phase transitions and the cognitive system approach to the brain. Technical course prerequisites are the standard mathematical tools for an advanced undergraduate course in the natural sciences or engineering. Each chapter comes with exercises and suggestions for further reading - solutions to the exercises are provided in the last chapter. From the reviews of previous editions: This is a very interesting introductory book written for a broad audience of graduate students in natural sciences and engineering. It can be equally well used both for teaching and self-education. Very well structured and every topic is illustrated by simple and motivating examples. This is a true guidebook to the world of complex nonlinear phenomena. (Ilya Pavlyukevich, Zentralblatt MATH, Vol. 1146, 2008) "Claudius Gros's Complex and Adaptive Dynamical Systems: A Primer is a welcome addition to the literature. . A particular strength of the book is its emphasis on analytical techniques for studying complex systems. (David P. Feldman, Physics Today, July, 2009)

In response to the US FDA's Critical Path Initiative, innovative adaptive designs are being used more and more in clinical trials due to their flexibility and efficiency, especially during early phase development. Handbook of Adaptive Designs in Pharmaceutical and Clinical Development provides a comprehensive and unified presentation of the princip

Software development is being revolutionized. The heavy-weight processes of the 1980s and 1990s are being replaced by light-weight, so called agile processes. Agile processes move the focus of software development back to what really matters: running software. This is only made possible by accepting that software development is a creative job done by, with, and for individual human beings. For this reason, agile software development encourages interaction, communication, and fun. This was the focus of the Fifth International Conference on Extreme Programming and Agile Processes in Software Engineering which took place between June 6 and June 10, 2004 at the conference center in Garmisch-Partenkirchen at the foot of the Bavarian Alps near Munich, Germany. In this way the conference provided a unique forum for industry and academic professionals to discuss their needs and ideas for incorporating Extreme Programming and Agile Methodologies into their professional life under consideration of the human factor. We celebrated this year's conference by reflecting on what we had achieved in the last half decade and we also focused on the challenges we will face in the near future.

This book is open access under a CC BY 4.0 license. This handbook synthesizes and analyzes the growing knowledge base on life course health development (LCHD) from the prenatal period through emerging adulthood, with implications for clinical practice and public health. It presents LCHD as an innovative field with a sound theoretical framework for understanding wellness and disease from a lifespan perspective, replacing previous medical, biopsychosocial, and early genomic models of health. Interdisciplinary chapters discuss major health concerns (diabetes, obesity), important less-studied conditions (hearing, kidney health), and large-scale issues (nutrition, adversity) from a lifespan viewpoint. In addition, chapters address methodological approaches and challenges by analyzing existing measures, studies, and surveys. The book concludes with the editors' research agenda that proposes priorities for future LCHD research and its application to health care practice and health policy. Topics featured in the Handbook include: The prenatal period and its effect on child obesity and metabolic outcomes. Pregnancy complications and their effect on women's cardiovascular health. A multi-level approach for obesity prevention in children. Application of the LCHD framework to autism spectrum disorder. Socioeconomic disadvantage and its influence on health development across the lifespan. The importance of nutrition to optimal health development across the lifespan. The Handbook of Life Course Health Development is a must-have resource for researchers, clinicians/professionals, and graduate students in developmental psychology/science; maternal and child health; social work; health economics; educational policy and politics; and medical law as well as many interrelated subdisciplines in psychology, medicine, public health, mental health, education, social welfare, economics, sociology, and law.

\*Describes an agile process that works on large projects \*Ideal for hurried developers who want to develop software in teams \*Incorporates real-life C#/.NET web project; can compare this with cases in book

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This book presents the latest research findings, methods and development techniques, challenges and solutions concerning UPC from both theoretical and practical perspectives, with an emphasis on innovative, mobile and Internet services. With the proliferation of wireless technologies and electronic devices, there is a rapidly growing interest in Ubiquitous and Pervasive Computing (UPC), which makes it possible to create a human-oriented computing environment in which computer chips are embedded in everyday objects and interact with the physical world. Through UPC, people can go online even while moving around, thus enjoying nearly permanent access to their preferred services. Though it has the potential to revolutionize our lives, UPC also poses a number of new research challenges.

#### The Adaptive Brain II

Lean Software Development: An Agile Toolkit Adapting agile practices to your development organization Uncovering and eradicating waste throughout the software development lifecycle Practical techniques for every development manager, project manager, and technical leader Lean software development: applying agile principles to your organization In Lean Software Development, Mary and Tom Poppendieck



The following work summarizes the development of shape-adaptive airfoil profiles for wind turbine application. The underlying motivation of this work is the potential cost effectiveness of wind power conversion through the introduction of shape-adaptive airfoils in future wind turbine blades. The employment of shape adaption system in the wind turbine blade geometry would facilitate a more efficient power harvesting for the next generation of smart wind turbines. In the scope of this work, the concepts of the dedicated shape-adaptive airfoil profiles for wind turbine application are investigated in light of their aerodynamic performances. The concepts of the actuation system are developed while taking pre-defined design boundary conditions suitable for wind turbine application into consideration. A novel numerical approach is developed towards the simulation of fluid-structure interaction for prototype shape-adaptive airfoils. The numerical scheme is employed in designing the shape-adaptive blade prototypes. Effort has been given to develop a unique actuator system for wind turbine application. In a next step, experimental investigations are carried out to quantize the aerodynamic flow-field around the shape-adaptive airfoils. Parallely, experimental investigations are carried out on a rigid NACA 0012 airfoil to log its performance at different stagger angles. In a further step, numerical investigations are carried out on the different airfoil configurations. Finally, performance analyses of the airfoils are carried out. The shape-adaptive airfoils outperform the rigid NACA 0012 airfoil for the desired performance envelope.

Design quality SAS software and evaluate SAS software quality SAS Data Analytic Development is the developer's compendium for writing better-performing software and the manager's guide to building comprehensive software performance requirements. The text introduces and parallels the International Organization for Standardization (ISO) software product quality model, demonstrating 15 performance requirements that represent dimensions of software quality, including: reliability, recoverability, robustness, execution efficiency (i.e., speed), efficiency, scalability, portability, security, automation, maintainability, modularity, readability, testability, stability, and reusability. The text is intended to be read cover-to-cover or used as a reference tool to instruct, inspire, deliver, and evaluate software quality. A common fault in many software development environments is a focus on functional requirements—the what and how—to the detriment of performance requirements, which specify instead how well software should function (assessed through software execution) or how easily software should be maintained (assessed through code inspection). Without the definition and communication of performance requirements, developers risk either building software that lacks intended quality or wasting time delivering software that exceeds performance objectives—thus, either underperforming or gold-plating, both of which are undesirable. Managers, customers, and other decision makers should also understand the dimensions of software quality both to define performance requirements at project outset as well as to evaluate whether those objectives were met at software completion. As data analytic software, SAS transforms data into information and ultimately knowledge and data-driven decisions.

Not surprisingly, data quality is a central focus and theme of SAS literature; however, code quality is far less commonly described and too often references only the speed or efficiency with which software should execute, omitting other critical dimensions of software quality. SAS® software project definitions and technical requirements often fall victim to this paradox, in which rigorous quality requirements exist for data and data products yet not for the software that undergirds them. By demonstrating the cost and benefits of software quality inclusion and the risk of software quality exclusion, stakeholders learn to value, prioritize, implement, and evaluate dimensions of software quality within risk management and project management frameworks of the software development life cycle (SDLC). Thus, SAS Data Analytic Development recalibrates business value, placing code quality on par with data quality, and performance requirements on par with functional requirements. Agile coding with design patterns and SOLID principles As every developer knows, requirements are subject to change. But when you build adaptability into your code, you can respond to change more easily and avoid disruptive rework. Focusing on Agile programming, this book describes the best practices, principles, and patterns that enable you to create flexible, adaptive code--and deliver better business value.

Expert guidance to bridge the gap between theory and practice Get grounded in Scrum: artifacts, roles, metrics, phases Organize and manage architectural dependencies Review best practices for patterns and anti-patterns Master SOLID principles: single-responsibility, open/closed, Liskov substitution Manage the versatility of interfaces for adaptive code Perform unit testing and refactoring in tandem See how delegation and abstraction impact code adaptability Learn best ways to implement dependency interjection Apply what you learn to a pragmatic, agile coding project Get code samples at: <http://github.com/garymclean/AdaptiveCode>

Principles of Sustainable Development is the component of Encyclopedia of Development and Economic Sciences in the global Encyclopedia of Life Support Systems (EOLSS), which is an integrated compendium of twenty one Encyclopedias. Sustainable Development is a term of differing definitions. Standing alone, the term is abstract and ambiguous. The meaning most often cited is that adopted by the World Commission on Environment and Development: meeting today's true needs and opportunities without jeopardizing the integrity of the planetary life-support base – the environment – and diminishing its ability to provide for needs, opportunities, and quality of life in the future. This definition may serve as a general principle, but for a guide to action its components sustainability and development must be given substance: what is to be sustained and what developed? Is development essentially economic or material growth, and is sustainability mostly a means to keep economic growth growing? Consequently, should development represent means toward ecologically sustainable ends? The concept of ecological sustainability has been advanced as a restriction on economic development. It follows therefore that principles of sustainable development depend upon how the term is understood and how it is put into practice. Even so the definition of the World Commission on Environment and Development, given the adequate definition of variable needs, provides the most reliable principle for testing the qualitative and ecological sustainability of development proposals. The Theme on Principles of Sustainable Development, in three volumes, deals with the diversity of points of view on this complex subject. These three volumes are aimed at the following five major target audiences: University and College students Educators, Professional practitioners, Research personnel and Policy analysts, managers, and decision makers and NGOs.

This volume provides a comprehensive review of historical and current research on the function of the frontal lobes and frontal systems of the brain. The content spans frontal lobe functions from birth to old age, from biochemistry and anatomy to rehabilitation, and from normal to disrupted function. The book is intended to be a standard reference work on the frontal lobes for researchers, clinicians, and students in the field of neurology, neuroscience, psychiatry, psychology, and health care.

This volume contains results gained from the EU-funded 6th Framework project ADIGMA (Adaptive Higher-order Variational Methods for Aerodynamic Applications in Industry). The goal of ADIGMA was the development and utilization of innovative adaptive higher-order methods for the compressible flow equations enabling reliable, mesh independent numerical solutions for large-scale aerodynamic applications in aircraft industry. The ADIGMA consortium was comprised of 22 organizations which included the main European aircraft manufacturers, the major European research establishments and several universities, all with well proven expertise in Computational Fluid Dynamics (CFD). The book presents an introduction to the project, exhibits partners' methods and approaches and provides a critical assessment of the newly developed methods for industrial aerodynamic applications. The best numerical strategies for integration as major building blocks for the next generation of industrial flow solvers are identified.

In the past fifty years, scholars of human development have been moving from studying change in humans within sharply defined periods, to seeing many more of these phenomenon as more profitably studied over time and in relation to other processes. The Handbook of Life-Span Development, Volume 1: Cognition, Biology, and Methods presents the study of human development conducted by the best scholars in the 21st century. Social workers, counselors and public health workers will receive coverage of

of the biological and cognitive aspects of human change across the lifespan.

Real-Time Simulation Technologies: Principles, Methodologies, and Applications is an edited compilation of work that explores fundamental concepts and basic techniques of real-time simulation for complex and diverse systems across a broad spectrum. Useful for both new entrants and experienced experts in the field, this book integrates coverage of detailed theory, acclaimed methodological approaches, entrenched technologies, and high-value applications of real-time simulation—all from the unique perspectives of renowned international contributors. Because it offers an accurate and otherwise unattainable assessment of how a system will behave over a particular time frame, real-time simulation is increasingly critical to the optimization of dynamic processes and adaptive systems in a variety of enterprises. These range in scope from the maintenance of the national power grid, to space exploration, to the development of virtual reality programs and cyber-physical systems. This book outlines how, for these and other undertakings, engineers must assimilate real-time data with computational tools for rapid decision making under uncertainty. Clarifying the central concepts behind real-time simulation tools and techniques, this one-of-a-kind resource: Discusses the state of the art, important challenges, and high-impact developments in simulation technologies Provides a basis for the study of real-time simulation as a fundamental and foundational technology Helps readers develop and refine principles that are applicable across a wide variety of application domains As science moves toward more advanced technologies, unconventional design approaches, and unproven regions of the design space, simulation tools are increasingly critical to successful design and operation of technical systems in a growing number of application domains. This must-have resource presents detailed coverage of real-time simulation for system design, parallel and distributed simulations, industry tools, and a large set of applications.

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