Game AI Pro 3 Collected Wisdom Of Game AI Professionals

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Seven Games: A Human History - Oliver Roeder 2022-01-25
A group biography of seven enduring and beloved games, and the story of why—and how—we play them. Checkers, backgammon, chess, and Go. Poker, Scrabble, and bridge. These seven games, ancient and modern, fascinate millions of people worldwide. In Seven Games, Oliver Roeder charts their origins and historical importance, the delightful arcana of their rules, and the ways their design makes them pleasurable. Roeder introduces thrilling competitors, such as evangelical minister Marion Tinsley, who across forty years lost only three games of checkers; Shusai, the Master, the last Go champion of imperial Japan, defending tradition against "modern rationalism"; and an IBM engineer who created a backgammon program so capable at self-learning that NASA used it on the space shuttle. He delves into the history and lore of each game: backgammon boards in ancient Egypt, the Indian origins of chess, how certain shells, from a particular beach in Japan make the finest white Go stones. Beyond the cultural and personal stories, Roeder explores why games, seemingly trivial pastimes, speak so deeply to the human soul. He introduces an early philosopher of games, the aptly named Bernard Suits, and visits an Oxford cosmologist who has perfected a computer that can effectively play bridge, a game as complicated as human language itself. Throughout, Roeder tells the compelling story of how humans, pursuing scientific glory and competitive advantage, have invented AI programs better than any human player, and what that means for the games—and for us. Funny, fascinating, and profound, Seven Games is a story of obsession, psychology, history, and how play makes us human.

Procedural Generation in Game Design - Tanya Short 2017-06-12
Making a game can be an intensive process, and if not planned accurately can easily run over budget. The use of procedural generation in game design can help with the intricate and multifarious aspects of game development; thus facilitating cost reduction. This form of development enables games to create their play areas, objects and stories based on a set of rules, rather than relying on the developer to handcraft each element individually. Readers will learn to create randomized maps, weave accidental plotlines, and manage complex systems that are prone to unpredictable behavior. Tanya Short's and Tarn Adams' Procedural Generation in Game Design offers a wide collection of chapters from various experts that cover the implementation and enactment of procedural generation in games. Designers from a variety of studios provide concrete examples from their games to illustrate the many facets of this emerging sub-discipline. Key Features: Introduces the differences between static/traditional game design and procedural game design Demonstrates how to solve or avoid common problems with procedural game design in a variety of concrete ways Includes industry leaders' experiences and lessons from award-winning games World's finest guide for how to begin thinking about procedural design

97 Things Every Cloud Engineer Should Know - Emily Freeman 2020-12-04
If you create, manage, operate, or configure systems running in the cloud, you're a cloud engineer--even if you work as a system administrator, software developer, data scientist, or site reliability engineer. With this book, professionals from around the world provide valuable insight into today's cloud engineering role. These concise articles explore the entire cloud computing experience, including fundamentals, architecture, and migration. You'll delve into security and compliance, operations and reliability, and software development. And examine networking, organizational culture, and more. You're sure to find 1, 2, or 97

things that inspire you to dig deeper and expand your own career. "Three Keys to Making the Right Multicloud Decisions," Brendan O'Leary "Serverless Bad Practices," Manases Jesus Galindo Bello "Failing a Cloud Migration," Lee Atchison "Treat Your Cloud Environment as If It Were On Premises," Iyana Garry "What Is Toil, and Why Are SREs Obsessed with It?", Zachary Nickens "Lean QA: The QA Evolving in the DevOps World," Theresa Neate "How Economies of Scale Work in the Cloud," Jon Moore "The Cloud Is Not About the Cloud," Ken Corless "Data Gravity: The Importance of Data Management in the Cloud," Geoff Hughes "Even in the Cloud, the Network Is the Foundation," David Murray "Cloud Engineering Is About Culture, Not Containers," Holly Cummins

Tomorrow's Jobs Today - Rafael Moscatel 2021-04-30
This collection of in-depth profiles featuring Smart City CIOs, Data Protection Officers, Blockchain CEO's, Informatics Doctors and other diverse, skilled professionals gives readers first-hand insight into what tomorrow's jobs look like today. The hands-on experiences, subject matter expertise and measured job advice shared within these pages demonstrate how identifying opportunities, setting the right cadence and building strong relationships are the essential ingredients to unlocking your future's potential. Tomorrow's Jobs Today is for the new graduate, the professional between jobs and the doting parents desperate to get their "brilliant" but lazy kid out of the basement. It's also for senior corporate leaders seeking an intimate understanding of the changes abounding in their organizations. It's for the manager who wants to inspire and encourage professional development. And it's for every knowledge worker out there who wants to leverage technology and information governance to reduce risk, generate revenue, and improve customer experiences.

Parenting Matters - National Academies of Sciences, Engineering, and Medicine 2016-11-21
Decades of research have demonstrated that the parent-child dyad and the environment of the familyâ€"which includes all primary caregiversâ€"are at the foundation of children's well- being and healthy development. From birth, children are learning and rely on parents and the other caregivers in their lives to protect and care for them. The impact of parents may never be greater than during the earliest years of life, when a child's brain is rapidly developing and when nearly all of her or his experiences are created and shaped by parents and the family environment. Parents help children build and refine their knowledge and skills, charting a trajectory for their health and well-being during childhood and beyond. The experience of parenting also impacts parents themselves. For instance, parenting can enrich and give focus to parents' lives; generate stress or calm; and create any number of emotions, including feelings of happiness, sadness, fulfillment, and anger. Parenting of young children today takes place in the context of significant ongoing developments. These include: a rapidly growing body of science on early childhood, increases in funding for programs and services for families, changing demographics of the U.S. population, and greater diversity of family structure. Additionally, parenting is increasingly being shaped by technology and increased access to information about parenting. Parenting Matters identifies parenting knowledge, attitudes, and practices associated with positive developmental outcomes in children ages 0-8; universal/preventive and targeted strategies used in a variety of settings that have been effective with parents of young children and that support the identified knowledge, attitudes, and practices; and barriers to and facilitators for parents' use of practices that lead to healthy child outcomes as well as their participation in effective programs and

services. This report makes recommendations directed at an array of stakeholders, for promoting the wide-scale adoption of effective programs and services for parents and on areas that warrant further research to inform policy and practice. It is meant to serve as a roadmap for the future of parenting policy, research, and practice in the United States.

AI Game Programming Wisdom 4 - Steve Rabin 2008
This all-new volume is filled with over 60 new, ready-to-use expert techniques, ideas, and solutions for game developers.

AI Game Programming Wisdom 2 - Steve Rabin 2004-01
Presents articles by artificial intelligence programmers that discuss techniques, concepts, architectures, and philosophies of AI game programming.

Game AI Pro 3 - Steve Rabin 2017-07-12
Game AI Pro3: Collected Wisdom of Game AI Professionals presents state-of-the-art tips, tricks, and techniques drawn from developers of shipped commercial games as well as some of the best-known academics in the field. This book acts as a toolbox of proven techniques coupled with the newest advances in game AI. These techniques can be applied to almost any game and include topics such as behavior trees, utility theory, path planning, character behavior, and tactical reasoning. KEY FEATURES Contains 42 chapters from 50 of the game industry's top developers and researchers. Provides real-life case studies of game AI in published commercial games. Covers a wide range of AI in games, with topics applicable to almost any game. Includes downloadable demos and/or source code, available at http://www.gameaipro.com SECTION EDITORS Neil Kirby General Wisdom Alex Champandard Architecture Nathan Sturtevant Movement and Pathfinding Damian Isla Character Behavior Kevin Dill Tactics and Strategy; Odds and Ends

Game AI Pro 3 - Steve Rabin 2017
Game AI Pro3: Collected Wisdom of Game AI Professionals presents state-of-the-art tips, tricks, and techniques drawn from developers of shipped commercial games as well as some of the best-known academics in the field. This book acts as a toolbox of proven techniques coupled with the newest advances in game AI. These techniques can be applied to almost any game and include topics such as behavior trees, utility theory, path planning, character behavior, and tactical reasoning.

AI for Games, Third Edition - Ian Millington 2019-03-18
AI is an integral part of every video game. This book helps professionals keep up with the constantly evolving technological advances in the fast growing game industry and equips students with up-to-date information they need to jumpstart their careers. This revised and updated Third Edition includes new techniques, algorithms, data structures and representations needed to create powerful AI in games. Key Features A comprehensive professional tutorial and reference to implement true AI in games Includes new exercises so readers can test their comprehension and understanding of the concepts and practices presented Revised and updated to cover new techniques and advances in AI Walks the reader through the entire game AI development process

The Daily Stoic - Ryan Holiday 2016-10-18
From the team that brought you The Obstacle Is the Way and Ego Is the Enemy, a beautiful daily devotional of Stoic meditations—an instant Wall Street Journal and USA Today Bestseller. Why have history's greatest minds—from George Washington to Frederick the Great to Ralph Waldo Emerson, along with today's top performers from Super Bowl-winning football coaches to CEOs and celebrities—embraced the wisdom of the ancient Stoics? Because they realize that the most valuable wisdom is timeless and that philosophy is for living a better life, not a classroom exercise. The Daily Stoic offers 366 days of Stoic insights and exercises, featuring all-new translations from the Emperor Marcus Aurelius, the playwright Seneca, or slave-turned-philosopher Epictetus, as well as lesser-known luminaries like Zeno, Cleanthes, and Musonius Rufus. Every day of the year you'll find one of their pithy, powerful quotations, as well as historical anecdotes, provocative commentary, and a helpful glossary of Greek terms. By following these teachings over the course of a year (and, indeed, for years to come) you'll find the serenity, self-knowledge, and resilience you need to live well.

AI for Games - Ian Millington 2021-11-16

What is artificial intelligence? How is artificial intelligence used in game development? Game development lives in its own technical world. It has its own idioms, skills, and challenges. That's one of the reasons games are so much fun to work on. Each game has its own rules, its own aesthetic, and its own trade-offs, and the hardware it will run on keeps changing. AI for Games is designed to help you understand one element of game development: artificial intelligence (AI).

Unreal Engine 4 AI Programming Essentials - Peter L. Newton 2016-03-18
Create responsive and intelligent game AI using Blueprints in Unreal Engine 4 About This Book Understand and apply your Game AI better through various projects such as adding randomness and probability, and introducing movement Configure and debug Game AI logic using multiple methodologies Bridge the gap between your knowledge and Game AI in Unreal Engine 4 Who This Book Is For This book is for programmers and artists who want to expand their knowledge of Game AI in relation to Unreal Engine 4. You are recommended to have some experience of exploring Unreal Engine 4 prior to this book because we jump straight into Game AI. What You Will Learn Understand the fundamental components of Game AI within Unreal Engine 4 Skillfully introduce Game AI within Unreal Engine 4 Configure, customize, and assign Navigation and AI components to your pawn Create, debug, and analyze Game AI behavior Design responsive Game AI using the Behavior Tree methodology Create smart objects designed to interact with AI Utilize advanced AI features within your project to maximize the user experience In Detail Unreal Engine is a powerful game development engine that provides rich functionalities to create 2D and 3D games. Developers have the opportunity to build cross-platform mobile and desktop games from scratch. This book will show you how to apply artificial intelligence (AI) techniques to your Unreal project using blueprints as your scripting language. You will start with an introduction to AI, and learn how it is applied to gaming. Then you'll jump right in and create a simple AI bot and apply basic behaviors to allow it to move randomly. As you progress, you'll find out how to implement randomness and probability traits. Using NavMesh, you will impart navigation components such as character movement, MoveTo nodes, settings, and world objects, and implement Behavior Trees. At the end of the book, you will troubleshoot any issues that might crop up while building the game. Style and approach This easy-to-follow project-based guide throws you directly into the excitement of Game AI in an approachable and comprehensive manner.

The Void Captain's Tale - Norman Spinrad 2011-09-29
Welcome aboard the sex-drive void ship . . . Captain Genro commands the giant spaceship Dragon Zephyr - on board are ten thousand passengers in electrocoma, a smaller number of conscious passengers eagerly utilising the ship's dream chambers - and a Pilot. In the context of space travel, the Pilot is merely a biological component in the machine. Always a woman, her function is to launch the ship into the Jump by means of a cosmic orgasm. She is a pariah, shunned by all. Void Captain Genro should never even have spoken to his Pilot, let alone tried to embark on a relationship with her. When he did so, the result was every space traveller's nightmare. A Blind Jump into the Void . . .

Learning Game AI Programming with Lua - David Young 2014-11-28
If you are a game developer or a general programmer who wishes to focus on programming systems and techniques to build your game AI without creating low-level interfaces in a game engine, then this book is for you. Knowledge of C++ will come in handy to debug the entirety of the AI sandbox and expand on the features present within the book, but it is not required.

Moneyball (Movie Tie-in Edition) (Movie Tie-in Editions) - Michael Lewis 2011-08-22
Explains how Billy Beene, the general manager of the Oakland Athletics, is using a new kind of thinking to build a successful and winning baseball team without spending enormous sums of money.

97 Things Every Programmer Should Know - Kevlin Henney 2010-02-05
Tap into the wisdom of experts to learn what every programmer should know, no matter what language you use. With the 97 short and extremely useful tips for programmers in this book, you'll expand your skills by adopting new approaches to old problems, learning appropriate best practices, and honing your craft through sound advice. With contributions from some of the most experienced and respected practitioners in the industry--including Michael Feathers, Pete Goodliffe, Diomidis Spinellis, Cay Horstmann, Verity Stob, and many more--this book contains practical knowledge and principles that you can apply to all kinds of projects. A few of the 97 things you should know: "Code in the Language of the Domain" by Dan North

"Write Tests for People" by Gerard Meszaros "Convenience Is Not an -ility" by Gregor Hohpe "Know Your IDE" by Heinz Kabutz "A Message to the Future" by Linda Rising "The Boy Scout Rule" by Robert C. Martin (Uncle Bob) "Beware the Share" by Udi Dahan

A Course in Game Theory - Martin J. Osborne 1994-07-12
A Course in Game Theory presents the main ideas of game theory at a level suitable for graduate students and advanced undergraduates, emphasizing the theory's foundations and interpretations of its basic concepts. The authors provide precise definitions and full proofs of results, sacrificing generalities and limiting the scope of the material in order to do so. The text is organized in four parts: strategic games, extensive games with perfect information, extensive games with imperfect information, and coalitional games. It includes over 100 exercises.

The Goal - Eliyahu M. Goldratt 2016-08-12
Alex Rogo is a harried plant manager working ever more desperately to try and improve performance. His factory is rapidly heading for disaster. So is his marriage. He has ninety days to save his plant - or it will be closed by corporate HQ, with hundreds of job losses. It takes a chance meeting with a colleague from student days - Jonah - to help him break out of conventional ways of thinking to see what needs to be done. Described by Fortune as a 'guru to industry' and by Businessweek as a 'genius', Eliyahu M. Goldratt was an internationally recognized leader in the development of new business management concepts and systems. This 20th anniversary edition includes a series of detailed case study interviews by David Whitford, Editor at Large, Fortune Small Business, which explore how organizations around the world have been transformed by Eli Goldratt's ideas. The story of Alex's fight to save his plant contains a serious message for all managers in industry and explains the ideas which underline the Theory of Constraints (TOC) developed by Eli Goldratt. Written in a fast-paced thriller style, The Goal is the gripping novel which is transforming management thinking throughout the Western world. It is a book to recommend to your friends in industry - even to your bosses - but not to your competitors!

Procedural Content Generation in Games - Noor Shaker 2016-10-18
This book presents the most up-to-date coverage of procedural content generation (PCG) for games, specifically the procedural generation of levels, landscapes, items, rules, quests, or other types of content. Each chapter explains an algorithm type or domain, including fractal methods, grammar-based methods, search-based and evolutionary methods, constraint-based methods, and narrative, terrain, and dungeon generation. The authors are active academic researchers and game developers, and the book is appropriate for undergraduate and graduate students of courses on games and creativity; game developers who want to learn new methods for content generation; and researchers in related areas of artificial intelligence and computational intelligence.

Responsible Artificial Intelligence - Virginia Dignum 2019-11-04
In this book, the author examines the ethical implications of Artificial Intelligence systems as they integrate and replace traditional social structures in new sociocognitive-technological environments. She discusses issues related to the integrity of researchers, technologists, and manufacturers as they design, construct, use, and manage artificially intelligent systems; formalisms for reasoning about moral decisions as part of the behavior of artificial autonomous systems such as agents and robots; and design methodologies for social agents based on societal, moral, and legal values. Throughout the book the author discusses related work, conscious of both classical, philosophical treatments of ethical issues and the implications in modern, algorithmic systems, and she combines regular references and footnotes with suggestions for further reading. This short overview is suitable for undergraduate students, in both technical and non-technical courses, and for interested and concerned researchers, practitioners, and citizens.

Game AI Pro 360: Guide to Character Behavior - Steve Rabin 2019-09-10
Steve Rabin's Game AI Pro 360: Guide to Character Behavior gathers all the cutting-edge information from his previous three Game AI Pro volumes into a convenient single source anthology that covers character behavior in game AI. This volume is complete with articles by leading game AI programmers that focus on individual AI behavior such as character interactions, modelling knowledge, efficient simulation, difficulty balancing, and making decisions with case studies from both commercial and indie games. Key Features Provides real-life case studies of game AI in published commercial games Material by top developers and

researchers in Game AI Downloadable demos and/or source code available online
Sophie's World - Jostein Gaarder 2007-03-20
One day Sophie comes home from school to find two questions in her mail: "Who are you?" and "Where does the world come from?" Before she knows it she is enrolled in a correspondence course with a mysterious philosopher. Thus begins Jostein Gaarder's unique novel, which is not only a mystery, but also a complete and entertaining history of philosophy.

Artificial Intelligence and Games - Georgios N. Yannakakis 2018-02-17
This is the first textbook dedicated to explaining how artificial intelligence (AI) techniques can be used in and for games. After introductory chapters that explain the background and key techniques in AI and games, the authors explain how to use AI to play games, to generate content for games and to model players. The book will be suitable for undergraduate and graduate courses in games, artificial intelligence, design, human-computer interaction, and computational intelligence, and also for self-study by industrial game developers and practitioners. The authors have developed a website (http://www.gameaibook.org) that complements the material covered in the book with up-to-date exercises, lecture slides and reading.

Game AI Pro 360: Guide to Tactics and Strategy - Steve Rabin 2019-09-06
Steve Rabin's Game AI Pro 360: Guide to Tactics and Strategy gathers all the cutting-edge information from his previous three Game AI Pro volumes into a convenient single source anthology that covers game AI strategy and tactics. This volume is complete with articles by leading game AI programmers that focus largely on combat decisions made in a wide variety of genres such as RTS, RPG, MOBA, strategy and tower defense games. Key Features Provides real-life case studies of game AI in published commercial games Material by top developers and researchers in Game AI Downloadable demos and/or source code available online

Game Changer - Matthew Sadler 2019-02-15
AlphaZero, the self-learning artificial intelligence system created by DeepMind, had been fed nothing but the rules of the Royal Game when it beat the world's strongest chess engine. The games that were published created a sensation: how was it possible to play in such a brilliant and risky style and not lose a single game against an opponent of superhuman strength? Matthew Sadler and Natasha Regan investigated more than two thousand previously unpublished games by AlphaZero. They also had unparalleled access to its developers and were offered a unique look 'under the bonnet'. Sadler and Regan reveal AlphaZero's thinking process and tell the story of its creation. Game Changer also presents a collection of lucidly explained chess games of astonishing quality. Both professionals and club players will improve their game by studying AlphaZero's stunning discoveries in every field that matters: opening preparation, piece mobility, initiative, attacking techniques, long-term sacrifices and much more. Game Changer offers intriguing insights into the opportunities and horizons of Artificial Intelligence. With a foreword by former World Chess Champion Garry Kasparov and an introduction by DeepMind CEO Demis Hassabis.

Life 3.0 - Max Tegmark 2017-08-29
New York Times Best Seller How will Artificial Intelligence affect crime, war, justice, jobs, society and our very sense of being human? The rise of AI has the potential to transform our future more than any other technology—and there's nobody better qualified or situated to explore that future than Max Tegmark, an MIT professor who's helped mainstream research on how to keep AI beneficial. How can we grow our prosperity through automation without leaving people lacking income or purpose? What career advice should we give today's kids? How can we make future AI systems more robust, so that they do what we want without crashing, malfunctioning or getting hacked? Should we fear an arms race in lethal autonomous weapons? Will machines eventually outsmart us at all tasks, replacing humans on the job market and perhaps altogether? Will AI help life flourish like never before or give us more power than we can handle? What sort of future do you want? This book empowers you to join what may be the most important conversation of our time. It doesn't shy away from the full range of viewpoints or from the most controversial issues—from superintelligence to meaning, consciousness and the ultimate physical limits on life in the cosmos.

Programming Collective Intelligence - Toby Segaran 2007-08-16

Want to tap the power behind search rankings, product recommendations, social bookmarking, and online matchmaking? This fascinating book demonstrates how you can build Web 2.0 applications to mine the enormous amount of data created by people on the Internet. With the sophisticated algorithms in this book, you can write smart programs to access interesting datasets from other web sites, collect data from users of your own applications, and analyze and understand the data once you've found it. Programming Collective Intelligence takes you into the world of machine learning and statistics, and explains how to draw conclusions about user experience, marketing, personal tastes, and human behavior in general -- all from information that you and others collect every day. Each algorithm is described clearly and concisely with code that can immediately be used on your web site, blog, Wiki, or specialized application. This book explains: Collaborative filtering techniques that enable online retailers to recommend products or media Methods of clustering to detect groups of similar items in a large dataset Search engine features -- crawlers, indexers, query engines, and the PageRank algorithm Optimization algorithms that search millions of possible solutions to a problem and choose the best one Bayesian filtering, used in spam filters for classifying documents based on word types and other features Using decision trees not only to make predictions, but to model the way decisions are made Predicting numerical values rather than classifications to build price models Support vector machines to match people in online dating sites Non-negative matrix factorization to find the independent features in a dataset Evolving intelligence for problem solving -- how a computer develops its skill by improving its own code the more it plays a game Each chapter includes exercises for extending the algorithms to make them more powerful. Go beyond simple database-backed applications and put the wealth of Internet data to work for you. "Bravo! I cannot think of a better way for a developer to first learn these algorithms and methods, nor can I think of a better way for me (an old AI dog) to reinvigorate my knowledge of the details." -- Dan Russell, Google "Toby's book does a great job of breaking down the complex subject matter of machine-learning algorithms into practical, easy-to-understand examples that can be directly applied to analysis of social interaction across the Web today. If I had this book two years ago, it would have saved precious time going down some fruitless paths." -- Tim Wolters, CTO, Collective Intellect

Behavior Trees in Robotics and AI - Michele Colledanchise 2018-07-20
Behavior Trees (BTs) provide a way to structure the behavior of an artificial agent such as a robot or a non-player character in a computer game. Traditional design methods, such as finite state machines, are known to produce brittle behaviors when complexity increases, making it very hard to add features without breaking existing functionality. BTs were created to address this very problem, and enables the creation of systems that are both modular and reactive. Behavior Trees in Robotics and AI: An Introduction provides a broad introduction as well as an in-depth exploration of the topic, and is the first comprehensive book on the use of BTs. This book introduces the subject of BTs from simple topics, such as semantics and design principles, to complex topics, such as learning and task planning. For each topic, the authors provide a set of examples, ranging from simple illustrations to realistic complex behaviors, to enable the reader to successfully combine theory with practice. Starting with an introduction to BTs, the book then describes how BTs relate to, and in many cases, generalize earlier switching structures, or control architectures. These ideas are then used as a foundation for a set of efficient and easy to use design principles. The book then presents a set of important extensions and provides a set of tools for formally analyzing these extensions using a state space formulation of BTs. With the new analysis tools, the book then formalizes the descriptions of how BTs generalize earlier approaches and shows how BTs can be automatically generated using planning and learning. The final part of the book provides an extended set of tools to capture the behavior of Stochastic BTs, where the outcomes of actions are described by probabilities. These tools enable the computation of both success probabilities and time to completion. This book targets a broad audience, including both students and professionals interested in modeling complex behaviors for robots, game characters, or other AI agents. Readers can choose at which depth and pace they want to learn the subject, depending on their needs and background.

Game Programming Algorithms and Techniques - Sanjay Madhav 2014
Game Programming Algorithms and Techniques is a detailed overview of many of the important algorithms and techniques used in video game programming today. Designed for programmers who are familiar with

object-oriented programming and basic data structures, this book focuses on practical concepts that see actual use in the game industry. Sanjay Madhav takes a unique platform- and framework-agnostic approach that will help develop virtually any game, in any genre, with any language or framework. He presents the fundamental techniques for working with 2D and 3D graphics, physics, artificial intelligence, cameras, and much more. Each concept is illuminated with pseudocode that will be intuitive to any C#, Java, or C++ programmer, and has been refined and proven in Madhav's game programming courses at the University of Southern California. Review questions after each chapter help solidify the most important concepts before moving on. Madhav concludes with a detailed analysis of two complete games: a 2D iOS side-scroller (written in Objective-Cusing cocos2d) and a 3D PC/Mac/Linux tower defense game (written in C# using XNA/ MonoGame). These games illustrate many of the algorithms and techniques covered in the earlier chapters, and the full source code is available at gamealgorithms.net. Coverage includes Game time management, speed control, and ensuring consistency on diverse hardware Essential 2D graphics techniques for modern mobile gaming Vectors, matrices, and linear algebra for 3D games 3D graphics including coordinate spaces, lighting and shading, z-buffering, and quaternions Handling today's wide array of digital and analog inputs Sound systems including sound events, 3D audio, and digital signal processing Fundamentals of game physics, including collision detection and numeric integration Cameras: first-person, follow, spline, and more Artificial intelligence: pathfinding, state-based behaviors, and strategy/planning User interfaces including menu systems and heads-up displays Scripting and text-based data files: when, how, and where to use them Basics of networked games including protocols and network topology

Game AI Pro 360: Guide to Architecture - Steve Rabin 2019-09-10
Steve Rabin's Game AI Pro 360: Guide to Architecture gathers all the cutting-edge information from his previous three Game AI Pro volumes into a convenient single source anthology covering game AI architecture. This volume is complete with articles by leading game AI programmers that further explore modern architecture such as behavior trees and share architectures used in top games such as Final Fantasy XV, the Call of Duty series and the Guild War series. Key Features Provides real-life case studies of game AI in published commercial games Material by top developers and researchers in Game AI Downloadable demos and/or source code available online

AI 2041 - Kai-Fu Lee 2021-09-14
How will artificial intelligence change our world within twenty years? A WALL STREET JOURNAL, WASHINGTON POST, AND FINANCIAL TIMES BEST BOOK OF THE YEAR • "This inspired collaboration between a pioneering technologist and a visionary writer of science fiction offers bold and urgent insights."—Yann LeCun, winner of the Turing Award; chief AI scientist, Facebook "Amazingly entertaining . . . Lee and Chen take us on an immersive trip through the future. . . . Eye-opening."—Mark Cuban AI will be the defining development of the twenty-first century. Within two decades, aspects of daily human life will be unrecognizable. AI will generate unprecedented wealth, revolutionize medicine and education through human-machine symbiosis, and create brand-new forms of communication and entertainment. In liberating us from routine work, however, AI will also challenge the organizing principles of our economic and social order. Meanwhile, AI will bring new risks in the form of autonomous weapons and smart technology that inherits human bias. AI is at a tipping point, and people need to wake up—both to AI's radiant pathways and its existential perils for life as we know it. In this provocative, utterly original work, Kai-Fu Lee, the former president of Google China and bestselling author of AI Superpowers, teams up with celebrated novelist Chen Qiufan to imagine our world in 2041 and how it will be shaped by AI. In ten gripping short stories, they introduce readers to an array of eye-opening 2041 settings, such as: • In San Francisco, the "job reallocation" industry emerges as deep learning AI causes widespread job displacement • In Tokyo, a music fan is swept up in an immersive form of celebrity worship based on virtual reality and mixed reality • In Mumbai, a teenage girl rebels when AI's crunching of big data gets in the way of romance • In Seoul, virtual companions with perfected natural language processing (NLP) skills offer orphaned twins new ways to connect • In Munich, a rogue scientist draws on quantum computing, computer vision and other AI technologies in a revenge plot that imperils the world By gazing toward a not-so-distant horizon, AI 2041 offers urgent insights into our collective future—while reminding readers that, ultimately, humankind remains the author of its destiny.

Fluid Engine Development - Doyub Kim 2017-01-20
From the splash of breaking waves to turbulent swirling smoke, the mathematical dynamics of fluids are varied and continue to be one of the most challenging aspects in animation. Fluid Engine Development demonstrates how to create a working fluid engine through the use of particles and grids, and even a combination of the two. Core algorithms are explained from a developer's perspective in a practical, approachable way that will not overwhelm readers. The Code Repository offers further opportunity for growth and discussion with continuously changing content and source codes. This book helps to serve as the ultimate guide to navigating complex fluid animation and development.

Artificial Intelligence - David L. Poole 2017-09-25
Artificial Intelligence presents a practical guide to AI, including agents, machine learning and problem-solving simple and complex domains.

The Wisdom of Crowds - James Surowiecki 2005-08-16
In this fascinating book, New Yorker business columnist James Surowiecki explores a deceptively simple idea: Large groups of people are smarter than an elite few, no matter how brilliant—better at solving problems, fostering innovation, coming to wise decisions, even predicting the future. With boundless erudition and in delightfully clear prose, Surowiecki ranges across fields as diverse as popular culture, psychology, ant biology, behavioral economics, artificial intelligence, military history, and politics to show how this simple idea offers important lessons for how we live our lives, select our leaders, run our companies, and think about our world.

Programming Game AI by Example - Mat Buckland 2005
Provides an introduction to AI game techniques used in game programming.

Reinforcement Learning, second edition - Richard S. Sutton 2018-11-13
The significantly expanded and updated new edition of a widely used text on reinforcement learning, one of the most active research areas in artificial intelligence. Reinforcement learning, one of the most active research areas in artificial intelligence, is a computational approach to learning whereby an agent tries to maximize the total amount of reward it receives while interacting with a complex, uncertain environment. In Reinforcement Learning, Richard Sutton and Andrew Barto provide a clear and simple account of the field's key ideas and algorithms. This second edition has been significantly expanded and updated, presenting new topics and updating coverage of other topics. Like the first edition, this second edition focuses on core online learning algorithms, with the more mathematical material set off in shaded boxes. Part I covers as much of reinforcement learning as possible without going beyond the tabular case for which exact solutions can be found. Many algorithms presented in this part are new to the second edition, including UCB, Expected Sarsa, and Double Learning. Part II extends these ideas to function

approximation, with new sections on such topics as artificial neural networks and the Fourier basis, and offers expanded treatment of off-policy learning and policy-gradient methods. Part III has new chapters on reinforcement learning's relationships to psychology and neuroscience, as well as an updated case-studies chapter including AlphaGo and AlphaGo Zero, Atari game playing, and IBM Watson's wagering strategy. The final chapter discusses the future societal impacts of reinforcement learning.

Unity Artificial Intelligence Programming - Dr. Davide Aversa 2018-11-30
Unity 2018 provides game and app developers with a variety of tools to implement Artificial Intelligence(AI). Leveraging these tools via Unity's API allows limitless possibilities for creating your game's worlds and characters. This edition will break down AI into simple concepts to give you a fundamental understanding of the topic to build upon.

Game AI Pro 3 - Steve Rabin 2017-07-12
Game AI Pro3: Collected Wisdom of Game AI Professionals presents state-of-the-art tips, tricks, and techniques drawn from developers of shipped commercial games as well as some of the best-known academics in the field. This book acts as a toolbox of proven techniques coupled with the newest advances in game AI. These techniques can be applied to almost any game and include topics such as behavior trees, utility theory, path planning, character behavior, and tactical reasoning. KEY FEATURES Contains 42 chapters from 50 of the game industry's top developers and researchers. Provides real-life case studies of game AI in published commercial games. Covers a wide range of AI in games, with topics applicable to almost any game. Includes downloadable demos and/or source code, available at http://www.gameaipro.com SECTION EDITORS Neil Kirby General Wisdom Alex Champandard Architecture Nathan Sturtevant Movement and Pathfinding Damian Isla Character Behavior Kevin Dill Tactics and Strategy; Odds and Ends

Huge Hashi Mixed Grids - Volume 1 - 159 Puzzles - Nick Snels 2014-10-12
When you buy this book you get an electronic version (PDF file) of the interior of this book. Huge Hashi bundles the biggest and baddest Hashi puzzles ever. Your brain will do over hours on these colossal logic puzzles. The goal of Hashi is to connect all of the encircled numbers (islands) into one single connected group by drawing lines (bridges) between the islands. Once you pick up this book, you won't be able to put it back down. You have been warned! Only 1 Hashi puzzle per page, with lots of white space for scribbling. Huge Hashi Mixed Grids is a collection of 159 puzzles: 30 Hashi 27x27 puzzles 30 Hashi 28x28 puzzles 30 Hashi 29x29 puzzles 30 Hashi 30x30 puzzles 39 extra logic puzzles I guarantee that every logic puzzle in this Hashi puzzle book has been carefully checked to ensure that each puzzle has only 1 solution. None of the puzzles in this book will appear in any of the other PuzzleBooks.net books. Hashi is also known as Hashiwokakero, Bridges, Chopsticks and Ai-Ki-Ai.