

2d Shader Development Foundations Make Your Game Unique In A World Full Of Lookalikes

Create high-performance, visually stunning 3D applications for the Web, using HTML5 and related technologies such as CSS3 and WebGL—the emerging web graphics standard. With this book, you'll learn how to use the tools, frameworks, and libraries for building 3D models and animations, mind-blowing visual effects, and advanced user interaction in both desktop and mobile browsers. In two parts—Foundations and Application Development Techniques—author Tony Parisi provides a thorough grounding in theory and practice for designing everything from a simple 3D product viewer to interactive training systems. Ideal for developers with JavaScript and HTML experience, Explore HTML5 APIs and related technologies for creating 3D web graphics, including WebGL, Canvas, and CSS Work with the popular JavaScript 3D rendering and animation libraries Three.js and Tween.js Delve into the 3D content-rendering pipeline, and the modeling and animation tools for creating killer 3D content Look into several game engines and frameworks for building 3D applications, including the authors' Vix framework Create 3D environments with multiple objects and complex interaction, using examples and supporting code Examine the issues involved in building WebGL-based 3D applications for mobile browsers

Essential Mathematics for Games and Interactive Applications, 2nd edition presents the core mathematics necessary for sophisticated 3D graphics and interactive physical simulations. The book begins with linear algebra and matrix multiplication and expands on this foundation to cover such topics as color and lighting, interpolation, animation and basic game physics. Essential Mathematics focuses on the issues of 3D game development important to programmers and includes optimization guidance throughout. The new edition Windows code will now use Visual Studio.NET. There will also be DirectX support provided, along with OpenGL - due to its cross-platform nature. Programmers will find more concrete examples included in this edition, as well as additional information on tuning, optimization and robustness. The book has a companion CD-ROM with exercises and a test bank for the academic secondary market, and for main market: code examples built around a shared code base, including a math library covering all the topics presented in the book, a core vector/matrix math engine, and libraries to support basic 3D rendering and interaction.

It's time to stop thinking that shaders are magical. You can use shaders to turn data into stunning visual effects, and get your hands dirty by building your own shader with this step-by-step introduction to shader development for game and graphics developers. Learn how to make shaders that move, tint, light up, and look awesome, all without cracking open a math textbook. Practical Shader Development teaches the theory behind how shaders work. The book also shows you how to apply that theory to create eye-popping visual effects. You'll learn to profile and optimize those effects to make sure your projects keep running quickly with all their new visuals. You'll learn good theory, good practices, and without getting bogged down in the math. Author Kyle Halladay explains the fundamentals of shader development through simple examples and hands-on experiments. He teaches you how to create and then how to fix them. Kyle explains (and contrasts) how to use the knowledge learned from this book in three of the most popular game engines today. What You'll LearnUnderstand what shaders are and how they work Get up to speed on the nuts and bolts of writing vertex and fragment shaders Utilize color blending and know how blend equations work Know the coordinate spaces used when rendering real-time computer graphics Use simple math to animate characters, simulate lights, and create a wide variety of visual effects Find and fix performance problems in shaders See how three popular game engines (Unity, UE4, Godot) handle shaders Who This Book Is For Programmers who are interested in writing their own shaders but do not know where to start, anyone who has ever seen shader code on a forum and wished they knew how to modify it just a little bit to fit into their own projects, and game developers who are tired of using the default shaders found in the game engines they are using. The book is especially useful for those who have been put off by existing shader tutorials which introduce complex math and graphics theory before ever getting something on the screen.

Beginning 3D Game Development with Unity is perfect for those who would like to come to grips with programming Unity. You may be an artist who has learned 3D tools such as 3ds Max, Maya, or Cinema 4D, or you may come from 2D tools such as Photoshop and Illustrator. On the other hand, you may just want to familiarize yourself with programming games and the latest ideas in game production. This book introduces key game production concepts in an artist-friendly way, and rapidly teaches the basic scripting skills you'll need with Unity. It goes on to show how you, as an independent game artist, can create casual interactive adventure games in the style of Telltale's Tales of Monkey Island, while also giving you a firm foundation in game logic and design. The first part of the book explains the logic involved in game interaction, and soon has you creating game assets through simple examples that you can build upon and gradually expand. In the second part, you'll build the foundations of a point-and-click style first-person adventure game—including reusable state management scripts, load/save functionality, a robust inventory system, and a bonus feature: a dynamic non-player character maze and mini-map. With the help of the provided 2D and 3D content, you'll learn to evaluate and deal with challenges in bite-sized pieces as the project progresses, gaining valuable problem-solving skills in interactive design. By the end of the book, you will be able to actively use the Unity 3D game engine, having learned the necessary workflows to utilize your own assets. You will also have an assortment of reusable scripts and art assets with which to build future games.

Pro Java 9 Games Development

Interactive 3D Graphics Programming with WebGL
Over 50 recipes to help you transform your game into a visually stunning masterpiece, 4th Edition
Learn OpenGL

WebGL Programming Guide
Learn to build games and graphics with SFML, OpenGL, and Vulkan using C++ programming
A Practical Guide for Independent Game Development

Discover how to make your Unity projects look stunning with Shaders and screen effects!
New technologies play an increasing role in different aspects of human-robot interactions. The visual combination of digital contents with real working spaces creates a simulated environment that is set out to enhance these aspects. This book presents and discusses fundamental scientific issues, technical implementations, lab testing and industrial applications. The reference book that not only acts as meta book in the field that defines and frames Mixed Reality use in Human-Robot Interaction, but also addresses up-coming trends and emerging directions of the field. This volume offers a comprehensive reference volume to the state-of-the-art in the area of MR in Human-Robot Interaction, an excellent mix of contributions from industry. All authors are experts and/or top researchers in their respective areas and each of the chapters has been rigorously reviewed for intellectual contents by the editorial team to ensure a high quality. This book provides up-to-date insight into the current research topics in this field as well as the latest technological advancements and the best working area.

Over 100 recipes exploring the new and exciting features of Unity 5 to spice up your Unity skillset About This Book Built on the solid foundation of the popular Unity 4.x Cookbook, the recipes in this edition have been completely updated for Unity 5 Features recipes for both 2D and 3D games Provides you with techniques for the new features of Unity 5, including the new Audio Mixer Who This Book Is For From beginners to advanced users, from artists to coders, this book is for you and everyone in your team! Programmers can explore multimedia features, and multimedia developers can try their hand at scripting. Basic knowledge and understanding of the Unity platform, game design principles, and programming knowledge on C#, audio, utilizing Unity 5's audio features including the new Audio Mixer, ambient sound with Reverb Zones, dynamic soundtracks with Snapshots, and balanced audio via Ducking Create better materials with Unity's new, physically-based, Standard Shader Measure and control time, including pausing the game, displaying clocks and countdown timers, and even implementing lights and effects such as reflection and light probes Create stylish user interfaces with the new UI system, including power-bars, clock displays, and an extensible inventory system Save and load text and media assets from local or remote sources, publish your game via Unity Cloud, and communicate with websites and their databases to create online scoreboards and state patterns, performance bottleneck identification, and methods to maximize game performance and frame rates Control 2D and 3D character movement, and use NavMeshAgents to write NPC and enemy behaviors such as seek, flee, flock, and waypoint path following In Detail Unity 5 is a flexible and intuitive multipatform game engine that is becoming the industry game by working through core concepts such as animation, audio, shaders, GUI, lights, cameras, and scripting to create your own games with Unity 5. Completely re-written to cover the new features of Unity 5, this book is a great resource for all Unity game developers, from those who have recently started using Unity right up to Unity professionals. The first half of the second half focuses on developing 3D game development skills. In the first half, you will discover the new GUI system, the new Audio Mixer, external files, and animating 2D characters in 2D game development. As you progress further, you will familiarize yourself with the new Standard Shaders, the Mecanim system, Cameras, and the new Lighting features to hone your non-player character skills. In the second half, you will explore Unity 5's extra features to enhance your 3D game development skills. Style and approach Each chapter first introduces the topic area and explains how the techniques covered can enhance your games. Every recipe provides step-by-step instructions, followed by an explanation of how it all works, and useful additional script (Full commented) is available to download, enabling you to follow each recipe's course.

In just 24 lessons of one hour or less, Sams Teach Yourself Unity Game Development in 24 Hours will help you master the Unity 2018 game engine at the heart of Ori and the Blind Forest, Firewatch, Monument Valley, and many other sizzling-hot games! This book's straightforward, step-by-step approach teaches you everything from the absolute basics through sophisticated techniques. Every lesson builds on what you've already learned, giving you a rock-solid foundation for real-world success. Step-by-step instructions carefully walk you through the most common Unity game development tasks. Practical, hands-on examples show you how to apply what you learn. Quizzes and exercises help you test your knowledge and stretch your skills up and running fast with the Unity 2018 game engine and editor Work efficiently with Unity's graphical asset pipeline Make the most of lights and cameras Sculpt stunning worlds with Unity's terrain and environmental tools Script tasks ranging from capturing input to building complex behaviors Quickly create repeatable, reusable game objects with prefabs Implement AI and custom character controllers Build realistic physical and trigger collisions Leverage the full power of Unity's Animation and new Timeline systems Integrate complex audio into your games Use mobile device accelerometers and multi-touch displays Build engaging 2D games with Unity's 2D Tools and Tilemap Apply the "finishing touches" and deploy your games Transform your game into a visually stunning masterpiece with over 70 recipes, 3rd Edition

The Cg Tutorial

Using JOGL and Java3D

The Official Guide to Godot 3.0

OpenGL Shading Language

C++ Game Development By Example

Advances in Human Factors and Simulation

Are you an artist or programmer who would like to come to grips with game creation in Unity? You may be an artist who has learned 3D tools such as 3ds Max, Maya, or Cinema 4D, or you may come from 2D tools such as Photoshop and Illustrator. Fully updated to cover scripting with C#, this new edition also covers baked global illumination and precomputed realtime global illumination with the new Enlighten lighting system, including light probes for use with the high definition render pipeline. You'll take advantage of surface shaders and physical materials, so all the lighting, shadowing, lightmapping, and forward vs. deferred rendering are handled automatically. This book introduces key game production concepts in an artist-friendly way, and rapidly teaches the basic scripting skills you'll need with Unity. It goes on to show how you, as an independent game artist or designer, can create interactive games, ideal in scope for today's casual and mobile markets, while also giving you a firm foundation in game logic and design. By the end of the book, you will be able to actively use the Unity 3D game engine, having learned the necessary workflows and problem solving skills to utilize your own assets and bring your ideas to life. You will also have an assortment of reusable scripts and art assets with which to build future games. If your strength is in programming, Beginning 3D Game Development with Unity 2018 will help you to understand the design and graphics side of game production. What You'll Learn Evaluate ideas and functionality with prototypes Assess, evaluate, and incorporate assets to use in your games Locate and then incorporate existing code into a project Create shaders without having to write code using the Shader Graph functionality Engage special effects with new improvements to the Shader Particle System enhance the first-person experience with Navigation and Pathfinding for NPCs Streamline UI and console games without compromising on quality with LOD and Occlusion Culling. Who This Book Is For Artists familiar with 3D tools, such as 3ds Max, Maya, or Cinema 4D, who would like to learn more of the programming aspects. Also programmers experienced with coding who want to understand important design principals and techniques.

Follow a walkthrough of the Unity Engine and learn important 2D-centric lessons in scripting, working with image assets, animations, cameras, collision detection, and state management. In addition to the fundamentals, you'll learn best practices, helpful game-architectural patterns, and how to customize Unity to suit your needs, all in the context of building a working 2D game. While many books focus on 3D game creation with Unity, the easiest market for independent developers to find is 2D games. 2D games are generally cheaper to produce, more feasible for small teams, and more likely to be completed. If you live and breathe games and want to create them then 2D games are a great place to start. By focusing exclusively on 2D games and Unity's ever-expanding 2D workflow, this book gives aspiring independent game developers the tools they need to thrive. Various real-world examples of independent games are used to teach fundamental concepts of building 2D games in Unity, using the latest tools built in Unity's updated 2D workflow. New all-illustrated chapters for distribution, such as Nintendo eShop, Xbox Live Marketplace, the PlayStation Store, the App Store, Google Play, itch.io, Steam, and GOG.com have made it easier than ever to discover, buy, and sell games. The golden age of independent gaming is upon us, and there has never been a better time to get creative, roll up your sleeves, and build 2D game you've always dreamed about. Developing 2D Games with Unity can show you the way. What You'll Learn Delve deeply into useful 2D topics, such as sprites, tile-sliding, and the brand new Tilemap feature. Build a working 2D RPG-style game as you learn.Construct a flexible and extensible game architecture using Unity-specific tools like Scriptable Objects, Cinemachine, and Prefabs.Take advantage of the streamlined 2D workflow provided by the Unity environment. Deploy games to desktop Who This Book Is For Hobbyists with some knowledge of programming, as well as seasoned programmers interested in learning to make games independent of a major studio.

Direct3D 11 offers such a wealth of capabilities that users can sometimes get lost in the details of specific APIs and their implementation. While there is a great deal of low-level information available about how each API function should be used, there is little documentation that shows how best to leverage these capabilities. Written by active me

Building XNA 2.0 Games: A Practical Guide for Independent Game Development is written by James Silva, who recently won the prestigious Microsoft Dream Play game competition with his award-winning game, The Dishwasher: Deal Samurai. Building XNA 2.0 Games: A Practical Guide for Independent Game Development is an in-depth and exclusive look into the entire XNA game development process and includes the creation of a software game masterpiece. James Silva guides you through the process he took to build his award-winning title, from concept to reality. He reveals tips and techniques for creating a polished, high-quality game with very few resources, while bridging the gap between coding and art. This title shows software developers the following: The creation of a polished game from start to finish Design philosophies Next-gen 2D graphics, including shaders Techniques for fast, fluid game play XACT Audio and Xhnpa Eye-catching particle effects for visual simulation The book is packed full of code, pictures, and valuable insights into XNA game development.

Proceedings of the AHFE 2019 International Conference on Human Factors and Simulation, July 24-28, 2019, Washington D.C., USA

Develop Custom Lighting Systems

Foundations of 3D Graphics Programming

Physically Based Shader Development for Unity 2017

Beginning 3D Game Development with Unity 2018

Godot Engine Game Development in 24 Hours, Sams Teach Yourself

Developing 2D Games with Unity

Unity 2021 Cookbook is a practical guide with recipes covering a wide variety of Unity's essential features. This new edition has been fully updated for Unity 2021 to help you discover not only the latest features but also modern game development practices.

Programmable graphics shaders, programs that can be downloaded to a graphics processor (GPU) to carry out operations outside the fixed-function pipeline of earlier standards, have become a key feature of computer graphics. This book is designed to open computer graphics shader programming to the student, whether in a traditional class or on their own. It is intended to complement texts based on fixed-function graphics APIs, specifically OpenGL. It introduces shader programming in general, and specifically the GLSL shader language. It also introduces a flexible, easy-to-use tool, glman, that helps you develop, test, and tune shaders outside an application that would use them.

The most powerful graphics tools available for XAML programmers, but shader development bears little resemblance to traditional .NET programming. With this hands-on book, you'll not only discover how to use existing shaders in your Windows Presentation Foundation (WPF) and Silverlight applications, you'll also learn how create your own effects with XAML and Microsoft's HLSL shading language. In the process, you'll write, compile, and test custom XAML shaders with the Shazam Shader Editor, a free utility developed by author Nait Ritscher. The book includes XAML and C# sample code, and Shazam contains all of the sample shaders discussed. Learn how shaders help you extend the GPU's rendering capabilities Explore prevailing shader types, such as color modification, blurring, and spatial transformation Get a quick tour of the shader features, and use pre-built effects on image elements in your application Examine the XAML ShaderEffect class to understand how WPF and Silverlight use shaders Learn about the shader-specific tools available in Visual Studio and Expression Blend Get up to speed on HLSL basics and learn how to create a variety of graphics effects

Master the art of Shader programming to bring life to your Unity projects About This Book This book will help you master the technique of physically based shading in Unity 5 to add realism to your game quickly through precise recipes From an eminent author, this book offers you the fine technicalities of professional post-processing effects for stunning results This book will help you master Shader programming through easy-to-follow examples to create stunning visual effects that can be used in 3D games and high quality graphics. Who This Book Is For Unity Effects and Shader Cookbook is written for developers who want to create their first Shaders in Unity 5 or wish to take their game to a whole new level by adding professional post-processing effects. A solid understanding of Unity is required. What You Will Learn Understand physically based rendering to fit the aesthetic of your game Enter the world of post-processing effects to make your game look visually stunning Add life to your materials, complementing Shader programming with interactive scripts Design efficient Shaders for mobile platforms without sacrificing their realism Use state-of-the-art techniques such as volumetric explosions and fur shading Build your knowledge by understanding how Shader models have evolved and how you can create your own Discover what goes into the structure of Shaders and why lighting works the way it does Master the math and algorithms behind the most used lighting effects since their introduction to Unity, Shaders have been notoriously difficult to understand and implement in games; complex mathematics have always stood in the way of creating your own Shaders and attaining that level of realism you crave. With Shaders, you can transform your game into a highly polished, refined product with Unity's post-processing effects. Unity Shaders and Effects Cookbook is the first of its kind to bring you the secrets of creating Shaders for Unity3D—guiding you through the process of understanding vectors, how lighting is constructed with them, and also how textures are used to create complex effects without the heavy math. We'll start with essential lighting and finishing up by creating stunning screen Effects just like those in high quality 3D and mobile games. You'll discover techniques including normal mapping, image-based lighting, and how to animate your models inside a Shader. We'll explore the secrets behind some of the most powerful techniques, such as physically based rendering! With Unity Shaders and Effects Cookbook, what seems like a dark art today will be second nature by tomorrow. Style and approach The recipes in this book contain step-by-step instructions, complemented by screenshots and code, and real-world examples.

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Creating 3D Games

examples. The example programs for each chapter are available at www.programming2dgames.com.

Physically Based Shader Development for Unity 2017Develop Custom Lighting SystemsApress

Leveraging the JavaFX APIs

Mixed Reality and Human-Robot Interaction

Practical Shader Development

Unity 3D Game Development

Programming 3D Applications with HTML5 and WebGL

Unity 2018 Game Development in 24 Hours, Sams Teach Yourself

In just 24 sessions of one hour or less, this guide will help you create great 2D and 3D games for any platform with the 100% free Godot 3.0 game engine. Its straightforward, step-by-step approach guides you from basic scenes, graphics, and game flow through advanced shaders, environments, particle rendering, and networked games. Godot's co-

creator and main contributor walk you through building three complete games, offering advanced techniques you won't find anywhere else. Every lesson builds on what you've already learned, giving you a rock-solid foundation for real-world success. Step-by-step instructions carefully walk you through the most common Godot engine

programming tasks and techniques Practical, hands-on examples show you how to apply what you learn Quizzes and exercises help you test your knowledge and stretch your skills Notes and tips point out shortcuts, solutions, and problems to avoid Learn how to... · Install Godot, create projects, and use the visual editor · Master the scene system, and organize games with Scene Trees · Create 2D graphics, 3D graphics, and animations · Use basic and advanced scripting to perform many game tasks · Process player input from any source · Control game flow, configurations, and resources · Maximize realism with Godot's physics and particle systems · Make the most of 3D shaders, materials,

lighting, and shadows · Control effects and post-processing · Build richer, more sophisticated game universes with viewports · Develop networked games, from concepts to communication and input · Export games to the devices you've targeted · Integrate native code, third-party APIs, and engine extensions (bonus chapter)

wgpu is the next-generation graphics API and future standard in Rust for both native devices and the web, aiming to provide modern 3D graphics and computation capabilities using GPU acceleration. This book provides all the tools you need to create advanced 3D graphics and GPU computing in Rust using this new wgpu API. First, this book will

take you through the development environment for building wgpu applications in Rust, and then introduce Rust and wgpu basics, shader programs, GPU buffers, and rendering pipelines. Next, you will learn how to create primitives and simple objects in wgpu. As you progress through the chapters, you will get to grips with advanced wgpu topics, including 3D transformations, lighting calculations, colormaps, and textures. At the same time, you will learn how to create advanced 3D wgpu objects, including various 3D wireframes, 3D shapes, and simple and parametric 3D surfaces with colormaps and textures, as well as beautiful 2D and 3D fractal images described by complex functions. In

addition, you will explore new wgpu features such as the compute shader and storage buffers, and use them to simulate large particle systems. By the end of this book, you will have the solid skills you need to build your own GPU-accelerated graphics and computing applications on both native devices and the web in Rust with the wgpu API. This

book includes: · Development environment and tools for building wgpu apps in Rust. · Rust and wgpu basics, WGSL shaders, and rendering pipeline. · Primitives and simple shapes in wgpu. · 3D transformations, model, viewing, projection, and various coordinate systems. · GPU buffers, uniform buffer objects, animation, and camera controls. ·

Normal vectors, lighting model, ambient, diffuse, and specular light calculations. · UV coordinates, texture mapping. · Color model, colormaps, and color interpolation. · 3D shapes, wireframes, surfaces, and 3D charts. · 2D and 3D fractal images created in the fragment shader. · Compute shaders, storage buffers, and large particle system

simulation.

Create ready-to-play 3D games with reactive environments, sound, dynamic effects, and more! Key Features Build a solid foundation for game design and game development Understand the fundamentals of 3D such as coordinates, spaces, vectors, and cameras Get to grips with essential Unity concepts including characters, scenes, terrains,

objects and more Book Description This book, written by a team of experts at Unity Technologies, follows an informal, demystifying approach to the world of game development. You'll learn the 3D and C# fundamentals before starting to build one short segment of the full game — a vertical slice. With every progressing chapter, you'll learn to

improve this game (alongside building your own) to make it ready to pitch to studios. Within Unity 3D Game Development, you will learn to: Design and build 3D characters, and the game environment Think about the users' interactions with your game Develop the interface and apply visual effects to add an emotional connection to your world

Grasp a solid foundation of sound design, animations, and lightning to your creations Build, test, and add final touches The book is split between expert insights that you'll read before you look into the project on GitHub to understand all the underpinnings. This way, you get to see the end result, and you're allowed to be creative and give your

own thoughts to design, as well as work through the process with the new tools we introduce. Join the book community on Discord: Read this book with Unity game developers, and the team of authors. Ask questions, build teams, chat with the authors, participate in events and much more. The link to join is included in the book. What you will

learn Learn fundamentals of designing a 3D game and C# scripting Design your game character and work through their mechanics and movements Create an environment with Unity Terrain and ProBuilder Explore instantiation and rigid bodies through physics theory and code Implement sound, lighting effects, trail rendering, and other dynamic

effects Create a short, fully functional segment of your game in a vertical slice Polish your game with performance tweaks JOIN the 'book-club' to read alongside other users, Unity experts, and ask the authors when stuck Who this book is for Our goal with this book is to enable every reader to build the right mindset to think about 3D games, and

then show them all the steps we took to create ours. The main target audience for this book is those with some prior knowledge in game development, though regardless of your experience, we hope to create an enjoyable learning journey for you.

The success of Angry Birds, Peggle, and Fruit Ninja has proven that fun and immersive game experiences can be created in two dimensions. Furthermore, 2D graphics enable developers to quickly prototype ideas and mechanics using fewer resources than 3D.2D Graphics Programming for Games provides an in-depth single source on creating 2D

graphics that c

Building XNA 2.0 Games

Unity 2021 Cookbook

WebGL: Up and Running

Godot Engine Game Development Projects

Unity 5.x Shaders and Effects Cookbook