

VR Developer

VR developers create immersive virtual reality (VR) experiences by collaborating with cross-functional teams that include designers, artists, programmers, and quality assurance (QA) experts. Their responsibilities include developing VR applications, implementing interactions, optimizing performance, and ensuring a seamless and immersive user experience in virtual environments.

Top three responsibilities

Software development

Leverage common VR toolkits, software development kits (SDKs), and custom solutions to develop immersive VR experiences.

Performance optimization

Identify and address bottlenecks within VR applications to ensure high performance standards for publication approval and comfortable user experience.

Hardware integration

Implement and troubleshoot VR hardware components, ensuring seamless functionality and compatibility with VR applications during development and publication.

Top three skills

Programming

Maintain and optimize code using established APIs, efficient coding styles, and best practices. Continually refactor to improve readability and performance.

VR interaction creation

Set up VR project settings using VR SDKs, ensure user safety with guardian systems, and create locomotion and accessibility systems.

Optimization

Conduct performance profiling, optimize apps for seamless frame rates and analyze asset impact for a smooth, uninterrupted VR experience.

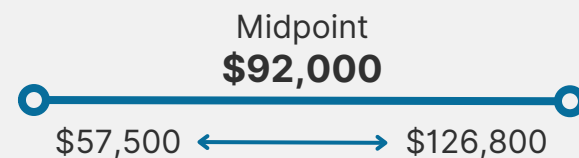
Career stage

Mid-level

3-5 years of professional experience required.



Pay Range



Note: These ranges are not reflective of Unity's compensation ranges for the same or similar roles, but are intended to be broad ranges to encompass all US geographies and company types. The pay data shown in this document is sourced from a variety of resources, including Glassdoor, ZipRecruiter, Global Game Dev Salaries, and Talent. This information is not to be shared with any person as a means to inform them about Unity's compensation ranges or philosophy.

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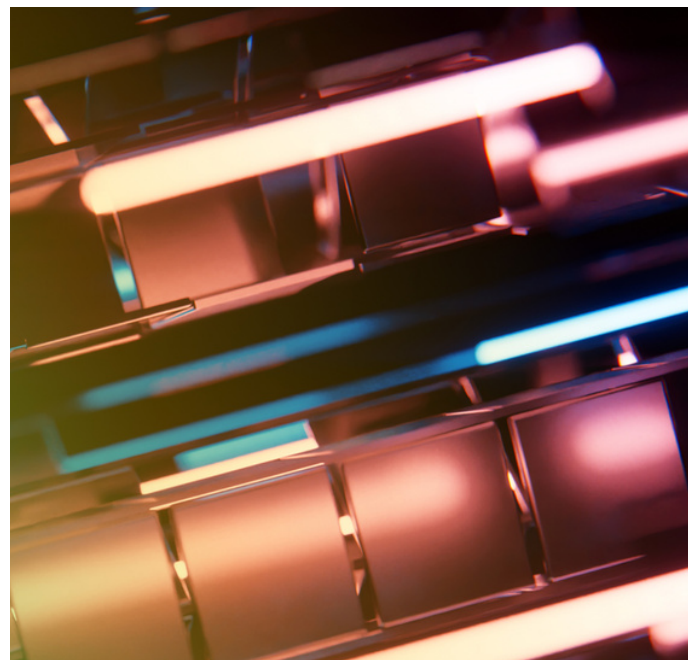
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Job details

Key traits and qualities of a VR developer

VR developers are versatile professionals equipped with a broad range of skills in real-time 3D (RT3D) development. Proficiency in building software features is one of their core strengths, allowing them to work with various APIs and VR-specific SDKs to craft immersive and interactive virtual reality experiences. They possess a deep knowledge of VR hardware and demonstrate expertise in diagnosing and resolving hardware-related issues during production. Often having a background as a generalist developer, many VR developers are also capable of creating or integrating a variety of assets, including 3D models, animations, audio, and visual effects (VFX). Due to the smaller size of many VR production teams, developers frequently take on responsibilities across the entire production pipeline, from initial concept design to final publication. They are well-versed in optimization techniques and use profiling tools to ensure applications run smoothly. A standout VR developer combines technical expertise with strong communication skills and maintains a sharp focus on user experience and interaction design.

Responsibilities

Much of a VR developer's time is spent implementing interactions and functionality as described in a project's design documents. While a major focus will be dedicated to VR specific interactions, core application functionality is also an important area of development. Below are a sample of the most common responsibilities that VR developers are assigned, but specific responsibilities will vary from company to company.



Core Responsibilities

Most VR developers will be assigned these responsibilities. All VR developers should be able to perform the following tasks:



Software development: VR developers create applications using specialized frameworks, SDKs, and RT3D engines such as Unity or Unreal. They leverage their programming skills to create core application functionality, implement VR specific interactions, add functionality to user interfaces, and create other interactive features based on design doc specifications.

User experience (UX) implementation: VR developers collaborate closely with UX designers to implement intuitive and accessible interactions using VR hardware. Depending on the needs of the project, they may create alternate control systems, customizable settings, or other features designed by the UX team. Features implemented by VR developers help increase the audience that is able to use the application.

VR interaction implementation: VR developers leverage specialized frameworks and SDKs to implement application-specific functionality, including features like hand and eye tracking, haptics, gesture and voice recognition, and spatial audio. Their responsibilities extend to crafting VR-specific features for seamless interaction within the virtual environment, alongside more generic functionalities like data input and UI navigation.

Performance optimization: VR experiences demand high performance to maximize user comfort during use. VR developers regularly profile applications to identify and address performance bottlenecks such as framerate drops and rendering issues.

Hardware integration: VR developers work with various VR hardware devices, such as headsets, motion controllers, and haptic feedback systems. They integrate and optimize the functionality of these hardware components within VR applications, ensuring compatibility and an optimal user experience.

Testing and quality assurance: VR developers conduct testing and quality assurance of VR applications to ensure stability, functionality, and accessibility. These tests involve user feedback sessions, bug fixing, and profiling to identify and resolve issues related to interaction, performance, and compatibility across different VR platforms.

Documentation: As part of production, VR developers document the different processes that are used to create components of their projects. This ensures that everyone on the team is aware of the techniques needed to produce the application.



Collaboration and communication: VR developers collaborate closely with designers, artists, and other developers to align the technical implementation with the creative vision of the VR experience. They communicate effectively in order to understand requirements, provide input on technical feasibility, and ensure seamless integration of VR elements into the overall development process.

Secondary Responsibilities

These tasks are slightly more specialized, but it will greatly benefit VR developers to be familiar with the following tasks should they be assigned:



Spatial audio implementation: VR developers might be asked to implement spatial audio systems within VR applications. This involves not only placing sounds in a 3D space and implementing accurate audio reflections (echoes), but also demands an understanding of audio cues.

Multiplayer experience creation: VR developers often need to have a good understanding of creating multiplayer experiences, even if only on a small scale for simple collaboration applications. To accomplish this, developers should be familiar with popular networking frameworks.

Cross-platform development: Depending on the project, an application may be released for multiple target devices. In this case, a VR developer might be expected to ensure compatibility and performance across various platforms by testing the application on each device type and adjusting as needed to meet the requirements of each system.

Personal Responsibilities

Beyond day-to-day responsibilities, VR developers should remain focused on increasing their skills and building their knowledge bases to remain up to date with VR technologies and industry standards.

Continuous learning and skill development: VR technologies and best practices continue to evolve rapidly. VR developers must invest time in staying up to date with the latest VR development techniques, hardware advancements, and VR-specific design principles. They should also continuously learn and apply new skills to create innovative and cutting-edge VR experiences.

Required skills

The specific tasks assigned to a VR developer will vary depending on the company they work for and the project they're working on. The skills listed below are universally relevant no matter the project, and these skills ensure that a VR developer is well rounded and adaptable to most jobs.

Holistic VR comprehension:

- ☐ Ability to calculate spatial transformations in 3D space using vector mathematics
- ☐ Knowledge of major components of VR hardware, including headsets, controllers, and sensors
- ☐ Awareness of general VR hardware and software limitations and requirements
- ☐ Familiarity with advancements in VR technologies, hardware, and design principles
- ☐ Familiarity with emerging VR development techniques, frameworks, and tools

Effective scripting practices:

- ☐ Experience composing scripts that utilize various APIs
- ☐ A coding style that is efficient and easy to read
- ☐ Familiarity with coding best practices to maximize code readability and efficiency
- ☐ Experience refactoring code for optimization and readability
- ☐ Experience participating in code review cycles

XR application planning:

- ☐ Ability to evaluate XR hardware in order to select a target platform based on project goals and requirements such as user experience, performance, and target audience
- ☐ Ability to review proposed XR experiences in order to suggest improvements that enhance quality and user satisfaction
- ☐ Ability to review XR applications for adherence to accessibility best practices



Audio Design Principles:

- ☐ Ability to create realistic spatialized audio effects by applying audio experience design principles

Building VR interactions:

- ☐ Experience with VR-specific SDKs to implement common user interactions, such as object grabbing, manipulation, and UI navigation
- ☐ Experience developing and integrating robust VR guardian/chaperone systems to enhance user safety within the virtual environment
- ☐ Ability to employ VR locomotion techniques, such as teleporting, constant movement, room scale, and stationary, to create immersive and comfortable user experiences
- ☐ Ability to employ mixed reality features in a VR application that allow users to interact with both physical and virtual objects

Performance optimization:

- ☐ Ability to analyze the impact of art assets and lighting on performance
- ☐ Ability to optimize applications to achieve smooth frame rates on all supported platforms
- ☐ Ability to conduct performance profiling directly on target hardware

Bug fixing and troubleshooting:

- ☐ Familiarity with unit testing to ensure that code functions as intended
- ☐ Ability to diagnose and fix code that compiles but fails to perform as expected
- ☐ Ability to troubleshoot runtime exceptions
- ☐ Familiarity with debugging applications on multiple platforms
- ☐ Ability to profile and debug trivial performance issues

Publishing XR applications:

- ☐ Ability to configure XR projects for deployment to various devices
- ☐ Knowledge of best practices in the VR application deployment process
- ☐ Ability to research specific submission guidelines for target VR platforms
- ☐ Ability to create required manifests and signing for security and verification purposes



Collaboration and communication:

- ☐ Ability to communicate issues verbally in clear language
- ☐ Excellent reading comprehension

Analytical skills:

- ☐ Ability to think abstractly and conceptually
- ☐ Analytical skills and critical thinking
- ☐ Strong organizational skills
- ☐ Methodical approach to problem-solving
- ☐ Great observational skills and attention to detail

Teamwork skills:

- ☐ Ability to give and receive feedback in a positive and helpful way
- ☐ Ability to work in a team
- ☐ Empathy with others in order to foster trust and respect
- ☐ Ability to resolve conflicts diplomatically

Technical proficiency:

- ☐ Excellent writing skills for documentation and internal communications
- ☐ Familiarity with common project management methods, such as agile and waterfall
- ☐ Familiarity with Key Performance Indicators (KPIs) and Objectives and Key Results (OKRs)
- ☐ Familiarity with popular task management software, such as Jira or Trello

Personal development:

- ☐ Ability to manage your time well to balance work, personal life, and relaxation for a healthy lifestyle
 - ☐ Habits for handling stress, such as mindfulness practices, to cope with the busy game industry
 - ☐ A growing professional network in the game industry, cultivated by joining forums, attending conferences, and going to meetups
 - ☐ Critical thinking skills for making informed decisions in creative projects
- 

Tools used

In the RT3D industry, VR developers use a large variety of tools for different tasks throughout the production process. The following list highlights important tool categories that are often required for day-to-day work. VR developers should be proficient in at least one tool from each category. Demonstrating an understanding of how and why a category of tools is used is more important than knowing the specific programs a company uses.

VR development platforms: VR developers primarily work with VR development platforms such as **Unity** or **Unreal Engine**. These platforms provide specialized tools, libraries, and frameworks to build immersive VR experiences.

VR hardware: VR developers work with various VR hardware devices and peripherals, including VR headsets such as the **Meta Quest**, **Apple Vision Pro**, and **Pico 4**, motion controllers, and tracking systems. They need to be familiar with the specifications and capabilities of different VR hardware to optimize their applications accordingly.

VR SDKs and APIs: VR developers utilize SDKs and APIs to access hardware features, implement VR interactions, and create platform-specific functionality. While proprietary SDKs like **Oculus SDK** and **SteamVR** are still in use, the industry is increasingly adopting **OpenXR** as the universal standard for cross-platform VR/AR development.

Integrated development environments (IDEs): IDEs such as **Visual Studio**, **Visual Studio Code**, and **JetBrains Rider** provide a comprehensive coding environment with features like code editing, debugging, version control integration, and project management.





Programming languages: VR developers work with programming languages suited for real-time 3D development, such as **C#**, **C++**, and **JavaScript**. The choice of language will depend on the specific engine, project requirements, project output, or company preferences.

Version control systems: Version control systems like **Git** or **SVN** are crucial for collaboration and code management. VR developers use these tools to track changes, manage code branches, and collaborate with other team members.

Debugging and profiling tools: Debugging and profiling tools, such as **Visual Studio Debugger** and **Unity Profiler**, help VR developers identify and troubleshoot issues in their code. These tools assist in understanding runtime behavior, performance bottlenecks, and memory management.

Project management and communication tools: VR developers often use project management tools like **Jira**, **Trello**, and **Asana** to track tasks, collaborate with team members, and communicate project updates. Communication tools like **Slack** and **Microsoft Teams** facilitate real-time communication and collaboration within the development team.

Collaborative roles

VR developers typically work closely with various job roles on a day-to-day basis, collaborating as part of a larger development team. The following list includes common job roles that VR developers may work with:

UI/UX designers: UI/UX designers work closely with VR developers to create intuitive and immersive user experiences within the virtual environment. They collaborate on designing user interfaces, interaction patterns, and visual elements to ensure a seamless and engaging user experience in VR applications.

3D artists/modelers: 3D artists and modelers are responsible for creating the visual assets, environments, and characters within the virtual world. VR developers work closely with 3D artists to integrate these assets into the VR application, optimize them for performance, and ensure visual fidelity and consistency.

Sound designers/audio engineers: VR developers collaborate with sound designers and audio engineers to create an immersive audio experience in VR applications. They work together to implement spatial audio, sound effects, and music that align with the virtual environment and enhance the overall immersion.

Game designers: If the VR application involves gaming elements, VR developers collaborate with game designers to implement gameplay mechanics, level designs, and overall game structure within the virtual environment. They work together to ensure a cohesive and engaging gaming experience in VR.





Quality assurance testers: QA testers play a critical role in ensuring the quality and functionality of VR applications. VR developers work closely with them to identify and fix bugs, test VR interactions, and ensure a smooth and comfortable user experience in the virtual environment.

Project managers/producers: Project managers or producers oversee the development process and ensure the successful completion of VR projects. They collaborate with VR developers to define project goals, manage timelines, allocate resources, and coordinate the overall development effort.

Hardware technicians: VR developers might work closely with hardware technicians or specialists who provide support for VR hardware setups, maintenance, and troubleshooting. They collaborate to ensure app and hardware compatibility, optimize performance, and address any hardware-related issues that may arise during development or deployment.

Data analysts: In some cases, VR developers collaborate with data analysts who analyze and interpret user data collected from VR applications. They work together to integrate tracking mechanisms, gather user behavior data, and implement data-driven features or improvements in the VR experience.

Job progression

The XR field often requires VR developers to rapidly build diverse skills, enabling flexibility in their career path. With strong skills, developers can switch to non-XR fields or specialize within XR, broadening their career options. Here are some potential paths for VR developers:

Senior VR developer: With increased experience and expertise in VR development, individuals can progress to senior VR developer roles. In these positions, they take on more complex projects, lead development teams, provide technical guidance, and contribute to the overall strategic direction of VR projects.

VR technical artist: VR technical artists combine their artistic skills with technical expertise to bridge the gap between art and programming in VR development. They focus on optimizing visual assets, implementing shaders, creating efficient pipelines, and ensuring the technical feasibility of the artistic vision within the VR environment.

VR designer: VR designers specialize in creating intuitive and immersive user interactions within virtual reality, with a strong emphasis on accessibility and user experience. They are dedicated to designing and implementing natural and engaging VR experiences, ensuring inclusivity for all users.

VR software engineer: VR software engineers are responsible for designing the overall software architecture of VR applications. They define the technical framework, make architectural decisions, and ensure scalability, performance, and maintainability of the VR software solutions. They collaborate closely with the development team and provide technical leadership.

Project manager/producer: With experience in VR development, individuals may transition into project management or production roles within the VR industry. VR project managers or producers oversee the planning, execution, and delivery of VR projects, and manage resources, timelines, and budgets.



Resources for career development

Learning experiences

VR Development Learning Pathway on Unity Learn: This learning experience is designed for anyone interested in creating experiences for VR using the Unity Engine. This pathway assumes a basic knowledge of Unity and a basic knowledge of C#.

XR Bootcamp: XR Bootcamp is an intensive, project-based training program designed to prepare job-ready XR developers. Students simulate a real XR studio environment, working on advanced-level projects in collaboration with industry partners. The program emphasizes portfolio development, hands-on mentorship, career services, and continuous upskilling through a proprietary XR knowledge base. Applicants must pass a C# eligibility test before admission. If candidates do not have prior coding experience, they are encouraged to complete XR Bootcamp's free C# preparation course to qualify. A strong commitment to learning, problem-solving, and adapting to the rapidly evolving XR landscape is expected.



Key terms

The game and broader creative industries have their own set of words and phrases that might seem confusing to outsiders. VR developers will come across specific terms that they'll need to know in order to do their job well and to work with others. To help aspiring developers prepare for a career in VR development and stand out as strong candidates in job interviews, below is a list of important terms commonly used in VR development. Learning these words and phrases will not only enhance understanding of the role, but will also provide the skills and confidence needed to succeed in this ever-changing industry.

Comfort mode: A set of features or design choices aimed at reducing motion sickness in VR players. Examples include vignette effects during movement, snap-turning, or teleportation-based locomotion.

Telemetry: The collection and analysis of user data during VR experiences, primarily movement, positional, and rotational.

Spatial mapping: The process of scanning the real-world environment to create a virtual representation of it, used in MR applications or to define play areas in VR.

Forward rendering vs deferred rendering:

- **Forward rendering:** A rendering technique where lighting and materials are calculated in a single pass. It's faster and less computationally taxing than deferred rendering, and is used for VR where high frame rates are a priority.
- **Deferred rendering:** A technique that calculates lighting effects in a second pass, allowing for complex lights and effects, but that can impact VR performance due to higher GPU demands.

Draw call: A request sent to the GPU to render a specific object or group of objects. In VR, reducing the number of draw calls is crucial for maintaining real-time performance.

Triangle count/polycount: The number of triangles (3D geometry) rendered in a scene. Lowering the triangle count is vital for optimizing VR scenes and maintaining high performance.





Batching: The process of combining multiple rendering tasks into a single draw call, reducing computational overhead. Common techniques include static batching (for non-moving objects) and dynamic batching (for objects in motion).

Occlusion culling: A rendering optimization technique that prevents the GPU from rendering objects that are not visible to the player (for example, objects hidden behind walls or other objects).

Level of detail (LOD): The practice of using different versions of a 3D model depending on its distance from the camera. Closer objects use high-polygon versions, while distant ones use simplified models to optimize performance.

Z-fighting: A visual artifact that occurs when two surfaces are very close together (for example, two meshes overlapping), causing the GPU to alternate between displaying one or the other.

Frustum culling: An optimization technique where objects outside the camera's "viewing frustum" (the visible area) are not rendered. This is critical for VR performance to avoid overloading the GPU.

Gimbal lock: A rotational calculation issue in 3D spaces (for example, Euler angles) that can cause unexpected behavior when axes align. Often avoided by using quaternions for rotation.

Quaternions: A mathematical representation of 3D rotations often used in development to avoid issues like gimbal lock. Quaternions allow for smooth and continuous movement.

Garbage collection: The automatic process of reclaiming unused memory in a program. Poor memory management can lead to garbage collection spikes, causing performance drops in VR.

Tick rate / fixed frame rate updates: The frequency at which a game engine runs a fixed cycle of calculations, such as physics updates. In VR, maintaining a constant tick rate is critical to avoid visual stuttering.



Game development version release terms:

- **Alpha:** An early version of a game that is still in development and typically not feature-complete. It's often used internally or shared with a limited audience for initial feedback, with many bugs expected.
- **Beta:** A more polished version of the game, but still with potential bugs or missing optimizations. It's often shared with a broader audience or testers to gather feedback before the final release.
- **Release candidate (RC):** A near-final version of the game that is considered stable and ready for release, unless significant bugs or issues are found.
- **Gold/final release:** The final version of the game that is distributed to the public or sent to platforms for publishing.

Real-time 3D (RT3D): A term used to describe three-dimensional graphics that are rendered and displayed in real time as the user interacts with them. RT3D engines (like Unity or Unreal Engine) continuously calculate and update the position, lighting, and appearance of objects in the scene, enabling dynamic and interactive experiences like video games, simulations, and virtual reality.

Internships

Though not always widely recognized, the gaming industry does provide internship programs, often hosted by larger studios. These internships deliver vital hands-on experience and serve as a gateway to entry-level positions. Industry internships are generally seasonal. Interested candidates should begin searching for openings as early as February to ensure their applications align with the recruitment timelines for summer programs. Information about internships can typically be found on company websites, and once available, these opportunities are often listed on job boards like [Hitmarker](#).

Several game studios offer regular internship programs, providing opportunities for students and recent graduates to gain industry experience. Here are a few notable ones:



[Activision Blizzard](#) - Known for franchises like Call of Duty and World of Warcraft, Activision Blizzard offers internships in game development, data analysis, and business operations.

[Electronic Arts \(EA\)](#) - EA offers a range of internships across various departments, including game development, design, and business operations.

[Epic Games](#) - The studio behind Fortnite offers internships in software engineering, game design, and more.

[Insomniac Games](#) - Creators of games like Spider-Man and Ratchet & Clank, Insomniac offers internships in various disciplines.

[Niantic](#) - Creator of augmented reality games like Pokémon GO, Niantic offers internships in fields such as software engineering, game design, data science, and user experience design.

[Riot Games](#) - Creators of League of Legends, Riot Games provides internships in areas such as game design, software engineering, and art.

[Sony Interactive Entertainment](#) - Offers internships in game development and business functions through PlayStation.

[Ubisoft](#) - With internships available in multiple countries, Ubisoft offers roles in game design, programming, art, and marketing.

Industry list

The skills developed in game production are increasingly in demand across industries beyond traditional games, opening up many opportunities for professionals to apply their expertise in new and impactful ways. Sectors such as education and training, architecture, engineering, and construction (AEC), healthcare, and marketing are leveraging tools and technologies like game engines and 3D modeling suites to create immersive experiences and product solutions. Whether it's designing VR simulations to train workers in hazardous environments, visualizing architectural projects for client presentations, or crafting interactive experiences for education and marketing, the transferable skills of game development enable professionals to seamlessly transition between industries and contribute to meaningful advancements across diverse fields.

Below is a list of industries that hire VR developers:

- Aerospace and defense
- Animation, media, film, and entertainment
- Architecture, engineering, and construction (AEC)
- Automotive
- Education and training
- Energy and natural resources
- Games
- Healthcare
- Manufacturing and engineering
- Marketing and advertising
- Retail and ecommerce



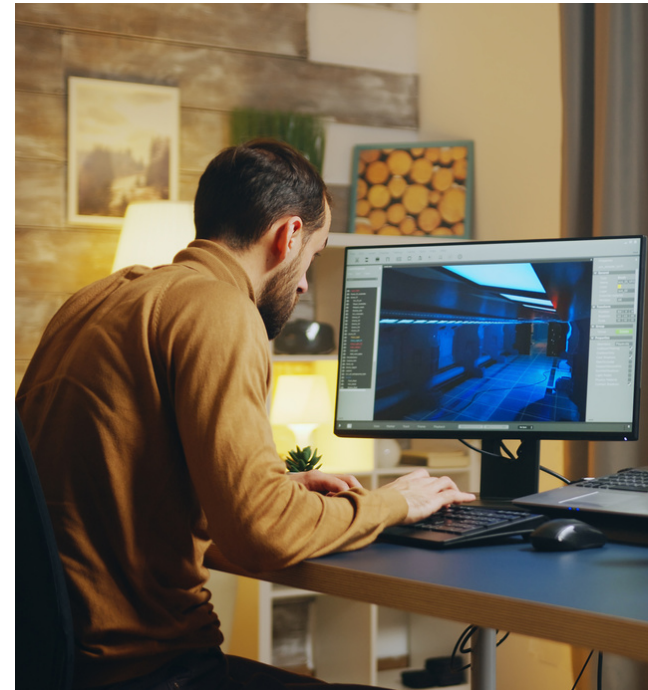
The application process

Prepare for the job hunt

After honing your skills to undertake a VR Developer role, it's time to gear up for the next significant step - the job search. Part two of this guide equips you with essential resources, guiding you through the intricate world of job applications and interviews.

In this fast-paced and competitive field, simply having the required technical proficiency isn't enough. It's about showcasing your abilities to potential employers in a compelling way. This section will guide you on how to craft impactful resumes and cover letters, construct an engaging portfolio that effectively exemplifies your unique talents, and optimize your LinkedIn profile to catch the attention of prospective employers. It also provides effective tips to help you excel in interviews.

This portion of the guide also imparts practical strategies to expedite your job search, aiding you in identifying ideal VR Developer roles that match your career ambitions. It underlines the importance of resilience in addressing job rejections, and how to leverage these experiences for your professional growth. Essentially, this guide serves as your all-in-one kit to help you secure a VR Developer role.



Resume

A resume is a vital tool for anyone seeking employment in the RT3D industry. Even when you're starting out in the industry and have little experience to showcase, your resume is an opportunity to highlight your skills and knowledge, and also serves as a way to point employers to samples of your work. You will often be asked to provide a resume in addition to filling out information about yourself in an application. Having a resume already prepared will help save you time during your job search.

When preparing a resume, be sure to include the following information:

- ☐ **Name and contact information:** This should be the full name you go by in a professional setting. If you are concerned about your contact information being publicly available, it's okay to minimize the information you include. However, you must have at least one contact method, such as an email, through which an employer can contact you to arrange an interview.
- ☐ **Desired title:** This should align with the job you're applying for (in other words, VR developer).
- ☐ **Skills:** List your technical skills, including specific scripting languages and software packages, in bullet format.
- ☐ **Projects:** Any projects you have worked on, and your specific role in them if on a team. Projects that you worked on while in a training/academic program are fine to list here. If you have any relevant work that has been published, be sure to include it.
- ☐ **Links to your work:** Relevant links to your LinkedIn, portfolio, github, or other work samples
- ☐ **Education:** School or other forms of training, if applicable.
- ☐ **Certifications/certificates:** Anything you earned during the course of your learning for this role that is formally recognized, if applicable.
- ☐ **Internships/apprenticeships:** Any formalized training experience you participated in, if applicable. Be sure to include information on the company that managed your internship/apprenticeship.
- ☐ **File name:** Ensure that the file name of your resume is simple, descriptive, and most importantly contains your full first and last name.

Automated Tracking Systems (ATS)

An important aspect of resume preparation to keep in mind is that today most employers make use of applicant tracking systems (ATS), which are a type of software that help companies manage the recruitment process. An ATS automates the process of sorting and filtering resumes to help identify likely candidates for a human reviewer. While it might seem frustrating that a computer reviews your resume before a person does, this enables recruiters and hiring managers to spend more time on resumes and potential job candidates than they would be able to otherwise. Because the first step of the application process is managed by computers, it's extremely important that you format your resume so that it's optimized for an ATS.

When preparing your resume for an ATS, be sure to review:

- ☐ **Keywords:** Include relevant keywords in your resume that match the job listing. ATS often scans for specific words or phrases to determine the relevance of an application. For example, if the job listing is looking for experience with Unreal Engine, and you know both Unity and Unreal, do not list "various game engines", but explicitly list the engines by name.
- ☐ **Formatting:** Use a clean and simple format. Avoid complex layouts, images, or graphics that may confuse the ATS. It's a general best practice to avoid including any images, especially a photo of yourself in your resume.
- ☐ **File format:** Submit your application in a format that the ATS can easily read, such as plain text or a common document format like .docx or .pdf. It's a good idea to have your resume ready in multiple formats ahead of time. Most word processing programs allow you to export to multiple formats. When uploading your resume to an application page, take special care to upload using the recommended format.
- ☐ **Section headings:** Clearly label sections of your resume (for example, "Work Experience", "Education", "Skills", etc.) to help the ATS categorize information accurately. Don't use specialized terms or uncommon acronyms in headers.
- ☐ **Bullet points:** Present information using bullet points for clarity. ATS systems often prefer straightforward, concise content.
- ☐ **Special characters:** Minimize the use of special characters, symbols, or unusual fonts, as these may not be interpreted correctly by the ATS. Default fonts found in most word processing programs are generally a safe choice.

Sample resume

Below is an example of a resume that follows the guidelines outlined above.

Alex Ample

XR Developer

(123) 456-7890 | alex@example.com | linkedin.com/in/alexample | aaportfolio.com

Education

Bachelor of Science, Computer Science

Example University, City, State

GPA: 3.9 | June 2024

- Relevant Coursework: XR Development and Design, Game Development and Design, Data Structures and Algorithms, Artificial Intelligence for Games, 3D Graphics Programming
-

Technical Skills

- Programming Languages: C++, C#, Python, JavaScript, Java
 - Game Engines: Unity (XR Interaction Toolkit), Unreal Engine (AR/VR Templates)
 - XR Development: OpenXR, ARCore, ARKit, Oculus SDK, SteamVR SDK, Vuforia
 - Web Technologies: HTML, CSS, React
 - Other Skills: Object-Oriented Programming, Version Control (Git), Agile Methodologies, Optimization for AR/VR, 3D Spatial Audio, UX/UI Design for Wearable Devices
-

Experience

Programmer Intern | Example Game Studio, City, State | June-September 2023

- Collaborated with senior developers to implement XR mechanics using C++ within Unreal Engine.
 - Debugged and optimized XR applications to maintain smooth performance across AR/VR hardware, including Meta Quest and mobile devices.
 - Participated in code reviews and contributed to team workflows by documenting XR best practices.
-

Projects

MindMap XR App | Lead XR Developer | Unity, C#, Blender | [Portfolio Link](#)

- Developed an educational XR app for mobile AR and VR devices to visualize complex mind maps in interactive 3D space.
- Integrated ARCore and ARKit functionalities to support mobile AR through plane detection and object anchoring.
- Built gesture-based interaction systems compatible with AR hand tracking and VR controllers.

AR Exhibit Guide App | Developer | Unity, C# | [GitHub Link](#)

- Designed and developed a cross-platform AR app for museum goers to explore exhibits using AR visuals.
- Integrated Vuforia SDK for marker-based tracking, enabling AR features triggered by exhibit signs.
- Created a real-time notification system that interacts with the player's location to provide exhibit information over AR displays.

Cover letters

While often considered one of the most time consuming aspects of applying for a job, cover letters are the first chance you have to introduce yourself to a company using your own words, and therefore represents an important opportunity. While an ATS may scan your cover letter for keywords much in the same way it does your resume, it's far more likely that an actual person will be reading your cover letter. It's common for people just entering the industry to create generic cover letters or even skip them entirely, so taking the time to craft a meaningful cover letter will help the reader remember you, and this may lead to an increased chance of getting an interview. Take care to make a positive and meaningful first impression.

While you may be able to reuse some content between cover letters, such as a personal introduction or an overview of your skills, most of a cover letter should be written specifically for the company you're sending it to. A cover letter should express why you would be a good candidate for the role, what specifically drew you to the job, and any interesting anecdotes or additional information that might pique the reader's interest.

A cover letter should be one page or less, and should contain the following information:

- A brief introduction of yourself
- What interests you about the company
- What made you want to apply for the role
- What makes you uniquely qualified for this specific job
- Thank the reader for their time

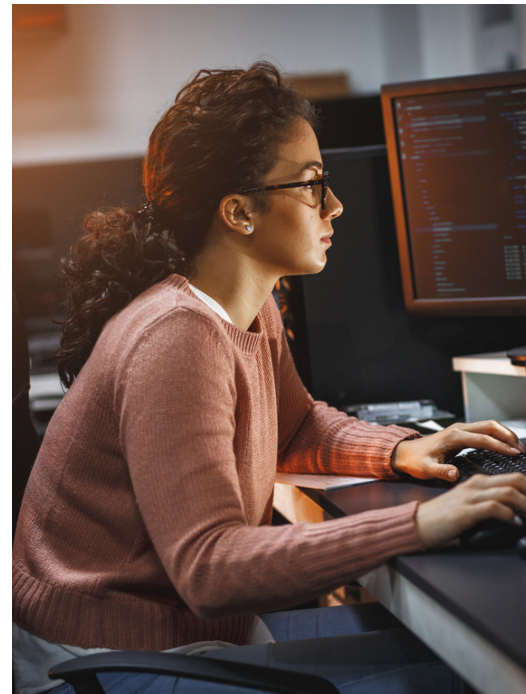


LinkedIn profile

In the RT3D industry, a strong LinkedIn profile is crucial and often underestimated by job seekers. LinkedIn is a vibrant community for the RT3D industry, regularly used by recruiters for initial candidate evaluations. Not having a LinkedIn profile might raise questions. The platform is a crucial networking space for the RT3D community where professionals share, stay updated about industry trends, and find job opportunities. Therefore, a well-crafted LinkedIn presence significantly boosts professional visibility and navigation of the RT3D job market.

When creating your LinkedIn profile, consider the following:

- ☐ **It is a professional space:** While LinkedIn can be considered a social media site, it's one for professional use exclusively. Use LinkedIn with the expectation that potential employers will see everything you post and include on your profile.
- ☐ **Create your resume first:** Having your resume created first will significantly speed up the process of creating your LinkedIn profile.
- ☐ **Customize your LinkedIn URL:** Personalize your LinkedIn URL to make it easy to share. A good rule of thumb is to make your URL your name.
- ☐ **Join and participate in groups:** Join LinkedIn groups that align with your interests to connect with fellow professionals in the industry you wish to join. Engage in discussions and share your insights in a respectful, professional manner.
- ☐ **Including a professional photo is normal:** Unlike on a resume, LinkedIn profiles can include a personal photo. This should be a professional, clear image of yourself, not a group shot. Essentially, choose a picture that would be suitable for a school or work ID.



Portfolio

A professional portfolio is one of the most important assets of all creative professionals in RT3D. It serves as a single point of reference for everything that you are currently capable of doing in your chosen area of focus. Portfolios are of such importance that a dedicated section covering recommendations can be found later in this Universal Job Profile. This section highlights practical details of what your portfolio should include for the application process.

When preparing your portfolio to be reviewed with your application, be sure that includes the following:

- ☐ **Your name and contact information:** This should be included in case the hiring manager reviewing your portfolio loses track of your resume. Ensure you're easy to contact from the portfolio itself. Consider including a link to your LinkedIn profile or to your resume.

- ☐ **Project descriptions:** Provide clear and concise descriptions for each project, explaining the goals, features, and technologies used. Highlight any unique challenges or innovative solutions you implemented. This helps prospective employers understand the scope and complexity of your work. Be sure to note if you developed a project as part of a team, and what role you performed.

- ☐ **Published projects:** Highlight projects that have been fully published and specify the platform they are available on. Published works underscore your ability to work across the entire production pipeline, which shows a deep understanding beyond prototype creation. Published projects are significant achievements and are of particular interest to employers.





Visual assets: Incorporate visual assets such as screenshots, videos, or interactive demos to showcase the visual quality and functionality of your projects. Visual elements provide a tangible representation of your work and make it easier for employers to assess your skills.



Ease of navigation: When putting your portfolio together, consider the type of content that you'll be showcasing and select a platform that will best serve that kind of content. If you choose to create your own custom website to host your portfolio, ensure that viewers can easily find the full contents of your portfolio with a minimum number of clicks.

Portfolio recommendations

The contents of your portfolio should be highly customized and unique to your specific skills and interests as a creative professional. Each project that you showcase should highlight an aspect of your technical abilities, problem-solving skills, and creativity. Most importantly, your portfolio should represent the kind of work you want to do in your chosen industry and be something you're proud of.

While VR-specific projects can be advantageous, they are not a strict requirement for your portfolio. What matters most is showcasing polished, well-executed projects that demonstrate your ability to solve complex problems and create engaging, interactive experiences. Transferable skills from non-VR projects, such as game design, interactive simulations, or unique software applications, can make a strong impression on recruiters and employers. When selecting portfolio pieces, focus on projects that exhibit creativity, technical depth, and attention to detail.

As a VR developer, your primary challenge will be presenting your work in an accessible way. With the exception of publicly published works on platforms such as Steam, it will be challenging for recruiters and employers to view your portfolio pieces in VR, so much of your work will be shown in video format. When recording videos of your applications, be sure to think carefully about what features you're trying to show and ensure that the message is being communicated well. For the rare cases when an employer may ask, have fully built versions of your applications available to share.



A few examples of portfolio pieces for a VR developer may include the following:

VR-specific projects:

A small scale complete VR experience: Create a fully realized VR experience that highlights your ability to build a complete product. This could be a virtual environment, a game, or an interactive simulation. Ensure it demonstrates your proficiency in user interaction, accessibility, and follows VR development best practices.

A training simulation: With training being a popular use case for VR, having a small educational experience in your portfolio can make you stand out to multiple employers. Create a complete experience that targets a specific industry or teaches a specific skill. The subject can be complex or simple, such as equipment operation or making a sandwich.

VR interaction showcase: If you are also interested in UX or design, create a series of mini-projects that demonstrate different VR interactions, such as object manipulation, teleportation, and hand tracking. Use this as an opportunity to demonstrate your ability to develop unique approaches to interactions, and be sure to avoid simply using base interactions that are easily implemented with many SDKs.

Accessible VR experience: Design and implement a VR application with a strong focus on accessibility. Consider features like customizable controls, voice commands, and other accessibility options to ensure that your VR experience is inclusive for a diverse audience.

Mixed reality integration: As more hardware becomes capable of supporting mixed reality, the ability to create applications that make use of a user's physical environment will become more in demand. Develop an application that seamlessly combines virtual and physical environments, allowing users to interact with both.



Non-VR projects:

Polished projects: Showcase completed, polished projects that demonstrate your ability to create engaging, game-like experiences. This could include traditional 2D or 3D games, interactive simulations, or other applications that emphasize gameplay mechanics, visual design, and technical execution. These projects can demonstrate your understanding of user engagement, systems design, and optimization, which are skills that are highly transferable to VR development.

Complex problem-solving examples: Include examples of projects where you've tackled difficult technical or design challenges. These could involve advanced AI systems, procedural generation, interesting input methods, or optimization for specific hardware constraints. Highlight how you identified and solved key problems, whether they were related to performance, usability, or technical feasibility.

Interaction designs: Even in non-VR applications, showcasing unique interaction designs can demonstrate your ability to think outside the box. These projects could include novel user interfaces, creative use of controllers, or experimental interaction paradigms that could be adapted for VR.

Cross-disciplinary projects: Create projects that combine elements of different fields, such as game development, simulation, education, or storytelling. These projects demonstrate your flexibility and ability to apply your skills to a wide range of applications, which is a valuable asset for VR developers working in diverse industries.





Portfolio maintenance

A portfolio is an asset that you should regularly curate as your skills grow and evolve. It is also a very good place to focus your efforts on as you wait for new job opportunities to become available. Consider the following when maintaining your portfolio:

- ☐ **Regularly remove outdated work:** Ensure your portfolio always aligns with your current skill level. Regularly review and eliminate pieces that no longer reflect your expertise or current approach to work. This ensures that viewers are able to accurately estimate your skill level.
- ☐ **Avoid unedited tutorial work:** Early on, your portfolio may include tutorial or assignment pieces. Improve these by adding variation or extra content for uniqueness, making your portfolio stand out from others who used the same tutorials.
- ☐ **Show your personality with your work:** Use your portfolio to showcase your interests, values, and unique style to potential employers through diverse projects that highlight your technical skills and problem-solving approach.
- ☐ **Focus on quality and diversity of work:** Choose fewer, high-quality projects for your portfolio to showcase diverse skills. Each should highlight your technical abilities, problem-solving, and creativity. Include more than one example to show potential employers your skills.

The importance of portfolio specificity

When you begin your job search, it may be tempting to showcase everything you can do by including a wide variety of samples in your portfolio. For instance, if you're a programmer with an interest in character art, you might consider adding your character models alongside your code samples. However, this approach can have a negative impact on your job prospects. A well-curated portfolio should reflect the specific roles you are currently applying for. Recruiters often have very little time to spend on each portfolio they review, and need to be able to quickly understand your primary area of expertise. Presenting a wide array of skills can muddle your focus and you are likely to be judged by your weakest skill. If you insist on pursuing multiple job types, create separate dedicated portfolios for each.

Application Tips

Spell check: Carefully check your resume, cover letters, portfolio, and LinkedIn profile for spelling errors. If possible, have your documents reviewed by another person to help identify any words that are spelled correctly, but used in the wrong context (for example, do you actually have a “Skulls” header in your resume, rather than a “Skills” header?).



Find the hiring point of contact: When applying for jobs, identify and connect with the hiring manager or recruiter via the company's site or LinkedIn. After applying, express your interest in the role to show proactivity. This gets you noticed, creates a good first impression, and aligns you with the goal of finding a proper fit, increasing your chances of standing out.



Ask questions during the interview: Have questions ready for your interview. This shows your interest in the role and helps you understand expectations and company culture. Being question-less could appear as disinterest or lack of preparation.



Follow up: Follow up with all communication during the application process. It shows politeness, an appreciation for people's time, and reinforces your interest. Respond to emails/calls promptly but not outside of working hours. Use follow up emails to thank people, ask additional questions, or clarify next steps post-interview.



Assess company fit: Remember, interviews are a two-way street. Just as the company is evaluating you, assess if you'd thrive there. Don't rush into unsuitable jobs due to circumstances, as you may end up job hunting again soon. During interviews, gauge if the company matches your values and work style for a better career fit.



Job boards

While traditional job boards can feature game industry jobs, job seekers will often have better luck using industry specific boards. These platforms concentrate on gaming-related positions ranging from development and design to quality assurance and production. These industry specific boards are invaluable tools for both emerging professionals and experienced individuals seeking new opportunities that are fine-tuned to their expertise. Below is a list of a few industry specific boards:

- [Amir Savat's Games Community](#)
- [Gamesindustry.biz jobs board](#)
- [Games Jobs Direct](#)
- [Grackle HQ](#)
- [Hitmarker](#)
- [Work With Indies](#)



The interview process

Interviews for VR developer positions typically include more than one round of interviews. These may be a mix of behavioral interviews to assess your interpersonal skills, teamwork, and cultural fit, as well as technical interviews to evaluate your technical knowledge and problem solving approach. Technical interviews may involve discussing real-time 3D concepts, VR best practices, and framework usage.

Initial screening: A hiring manager or recruiter conducts an initial screening to assess your basic qualifications, interest in the role, and understanding of the target industry. This stage may involve a review of your resume and a preliminary phone or video interview.

Technical assessment: Many companies conduct a technical assessment to evaluate your programming skills, VR development capabilities, and problem-solving abilities. This may involve coding exercises, interaction implementation with specific SDKs, usage of version control systems as Github, and application troubleshooting.

Coding interviews: Some interviews may include hypothetical problem-solving scenarios or coding challenges to assess your ability to communicate, think critically, and solve problems in real-time. This may involve working through a coding problem on a whiteboard (either physical or digital) or explaining your approach to a given scenario. These interviews generally focus more on assessing your thought process, and may even limit you to writing pseudo code.

Cultural fit: In addition to technical assessments, companies often prioritize interviews focusing on cultural fit. These conversations provide your prospective team with the chance to understand how your values align with the company culture. Expect questions that delve into your work style, collaboration preferences, and how you approach challenges as part of a team. Demonstrating your adaptability, communication skills, and enthusiasm for collaborative work is key to making a positive impression in these cultural fit interviews.



Preparing for an interview

Moving to the interview stage is a pivotal moment for your job search and can often come with nervousness or stress. Proper preparation is key to presenting yourself as a confident and capable candidate. This section will provide some essential steps to ensure you navigate the interview process seamlessly and leave a lasting positive impression on potential employers.

- ☐ **Respond promptly:** When contacted by a hiring manager or recruiter for an interview, respond promptly. Don't feel pressured to respond outside of regular working hours, however, demonstrate your enthusiasm and commitment by acknowledging their outreach in a timely manner.

- ☐ **Share your availability:** Many companies use special applications that allow you to self select your availability, but if this isn't the case, provide a range of dates and times for the interview within the upcoming weeks. If dealing with different time zones, specify your current time zone to avoid scheduling confusion.

- ☐ **Time your availability strategically:** Whenever possible, schedule the interview on a date and at a time when you have few or no other commitments. This minimizes stress and allows flexibility for the interview to extend if needed.

- ☐ **Present yourself professionally:** Regardless of the interview format (in person or online), present yourself professionally. While RT3D dress codes may lean towards casual, research the company's expectations and opt for business casual attire if uncertain.





☐ **Online interview etiquette:** If your interview is online, be sure to implement the following guidelines:

- Choose a quiet location to avoid interruptions.
- Test your camera, microphone, and audio in advance to prevent technical issues.
- Keep your phone and computer plugged in, or have your device chargers nearby.
- Pay attention to the background, ensuring it is neat and presentable.
- Consider using a professional digital background if necessary.

Practice interview: If you feel nervous, consider conducting a practice interview. This helps familiarize yourself with common questions and boosts your confidence. This can be done with a trusted friend or family member, or simply by answering example interview questions out loud by yourself.

☐

Stay positive: Avoid excessive negativity, even if your job search has been challenging. Present yourself as genuinely excited about the opportunity, focusing on a positive mindset; remember, this interview might lead to a job offer.

☐

The STAR interview method

The STAR method, which stands for Situation, Task, Action, and Result, is a common approach where interviewers often frame questions to be best addressed using this structured format.

Watch for questions that prompt you to describe past situations, discuss specific challenges, or detail achieved results. When responding, structure your answers to articulate the situation or task, the actions you took, and the positive outcomes attained. This method provides a systematic way to highlight your problem-solving and decision-making skills, aligning seamlessly with the industry's interview expectations. Utilizing the STAR method enables you to stay focused, respond succinctly, and demonstrate your skills with the interviewer's preferred format, leaving a lasting positive impression.

Navigating job rejection

During your job hunt, you will likely face rejection for some of the roles you apply for. While this can be challenging, it's important to remember that rejection doesn't define your worth or abilities. Keep the following points in mind if you start feeling discouraged in your job search:

Rejection isn't personal: Job hunting is tough, especially when facing rejection or lack of responses. Remember, these setbacks don't define your self-worth or skills. They are often part of the process and not a reflection of your abilities or value.

It's a numbers game: With sometimes hundreds of applicants for each job opening, resumes can easily be overlooked. Rejections often stem from high competition and timing, not necessarily your qualifications.

Decision complexity: Employers often must choose from several strong candidates, meaning rejection doesn't always relate to your capability. It's often about finding the best fit among qualified contenders, so don't let this shake your confidence.

Persistence pays off: Job hunting requires consistency and perseverance. Rejection is part of the journey, but it doesn't determine your worth or future success. Use setbacks to refine your approach, learn, and continue applying confidently.

Seek feedback: Whenever possible, reach out for constructive feedback from recruiters to gain insights on how you interviewed, which will help you enhance future efforts. Remember, your aim is not just to land a job, but to find the right fit for both yourself and the employer.

Focus on growth: Use downtime between applications to improve skills, update your resume, and explore professional development opportunities. This shows potential employers your commitment to growth and boosts your confidence.



Acknowledgements

The development of this Universal Job Profile was made possible by the expertise and support of the Employer Advisory Board (EAB). Composed of professionals from leading companies in the real-time 3D landscape, the EAB serves as dedicated subject matter experts for the initiative, offering invaluable insights into the in-demand job roles within their respective industries. We extend our sincere thanks to each member of the EAB for their commitment to the success of the Universal Job Profiles. Their dedication not only showcases their professionalism but also highlights their significant investment in shaping a brighter future for the RT3D industry. We appreciate the collaborative spirit and contributions of the EAB, which have played a crucial role in advancing careers and opportunities within the RT3D field.

Employer Advisory Board Members



With special thanks to:

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About the Universal Job Profiles

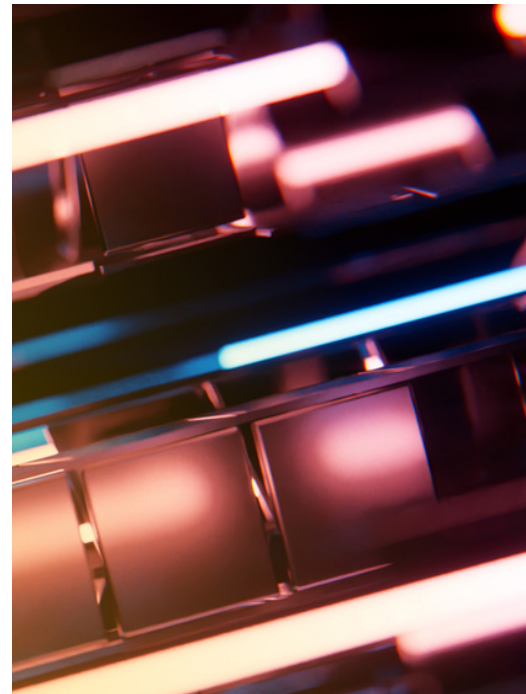
The Universal Job Profiles are developed as part of **Elevate**, a Unity initiative dedicated to facilitating the entry of new talent into the games and creative 3D industries by establishing robust and open lines of communication among job seekers, educators, and employers.

Universal Job Profiles have been created to provide a unified framework for defining job roles within the games and creative sectors. The goal of this document is to serve as a handbook for anyone seeking a job, aiming to create a learning experience, or vetting candidates. By standardizing job roles, aspiring professionals can confidently acquire the necessary skills, educational institutions can design comprehensive learning experiences covering the full spectrum of each job, and employers can easily evaluate job candidates.

The data for Universal Job Profiles was gathered using the expertise of the Employer Advisory Board: a group of experts from industry-leading companies across all parts of the creative landscape, including games, media, training, and more. The board serves as our subject matter expert resource, providing crucial industry insights about in-demand job roles. By collaborating with the Employer Advisory Board, we ensure that the information shared in the Universal Job Profiles is up-to-date, accurate, and representative of actual industry needs.

These documents have been created in service to the games and wider creative 3D industries, aiming to enable more diverse and talented individuals to secure jobs in this dynamic field. As such, Universal Job Profiles will always be freely available for public use.

To learn more, check out the [Elevate page](#).



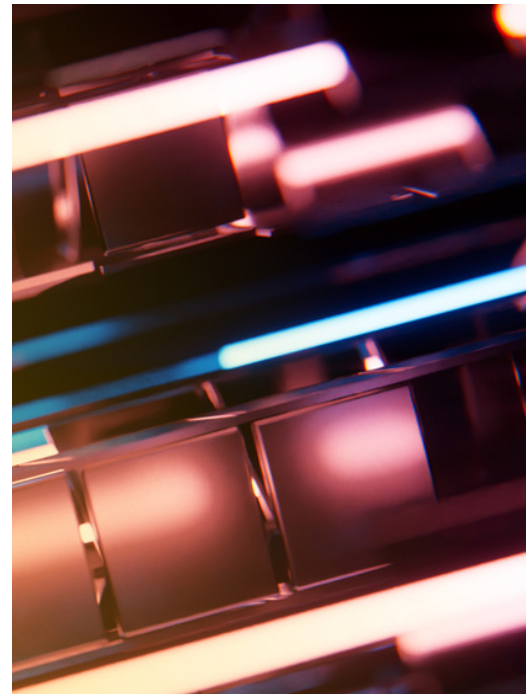
Contributing to the Universal Job Profile

All Universal Job Profiles are living documents: they are reviewed by the EAB twice annually to ensure that they remain accurate and up to date with the latest needs of the games and creative 3D industries. We also welcome any suggestions from the community to help improve the overall quality and usability of these documents.

If you have any suggestions, questions, or feedback regarding this Universal Job Profile, please let us know by **filling out this form**.

If you or your company has created a career development resource, such as a learning experience, certification, or mentorship program that aligns with this Universal Job Profile and would like to have it included in this document, **please fill out this form**.

The Employer Advisory Board is actively recruiting new members. This is a volunteer board for companies that use game engines and other 3D tools to ship their products and personally employ staff that use these tool sets as part of their day-to-day job. Members of the EAB advise on industry standards, provide subject matter experts for informational interviews, and help determine what Universal job profiles should be made next. If your company is interested in learning more and potentially joining the board, **please fill out this form**.



CHANGELOG



1.0-2025-06-06

- New pages added:
 - Keywords
 - Internships
 - Job board
- Updated skills format to better align to job listings
- Added new career development resource
- Updated paybands
- Reorganized pages for better ease of use
- Updated contact links
- Updated EAB membership logos

0.0.2 - 2024-06-25

- Early access release:
 - Minor layout adjustments
 - Updated contact links
 - Updated company logos
 - Added pay band info

0.0.1 - 2024-01-17

- Initial review release