GABRIEL ARROYO HINOJOSA

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https://gitlab.com/Gabroy

Education

Degree in Computer Engineering
Universitat Pompeu Fabra, Barcelona, 2014 - 2018

Master's Degree on Videogame Development
Universitat Pompeu Fabra - Barcelona School of Management, Barcelona, 2018 - 2019

Work Experience

Engine Programmer, August 2019 - Currently (4 Years)
Novarama, Barcelona

- Released three projects developed on UE4 and UE5.
- Developed on PC, PS4 and iOS.
- Worked on engine, optimization, rendering and implemented several gameplay and UI systems.
- Designed and implemented several tools to improve productivity and help art and design teams optimize their work.
- Designed and implemented multiple solutions in engine and game code, to improve performance in both GPU and CPU.
- Extended and added new UE features: Modified LPV Propagation Volumes for efficient real time rendering on low end GPUs, implemented Component Cache Coherence, refined culling systems, ...

Launched Titles

Samurai Jack: Battle Through Time - Apple Arcade - Novarama - Mac, iOS

- Worked on the port of the title to Apple's Mac and iOS platforms.
- Responsible of most of the rendering and optimization tasks during the project.
- Developed tools and multiple custom solutions to adapt the game to targeted platforms while maintaining performance and a faithful look.
- Coded multiple UI elements and translated multiple rendering materials from DirectX to Metal API.

Killsquad - Novarama - PC, PS4, PS5

- Worked on all the versions of the game since Early Access until the end of the development cycle.
- Developed code for multiple areas of the project: gameplay, UI, rendering ... Responsible of most of the optimization tasks related with both CPU and GPU issues.
- Implemented level tools and redacted guideline documents for art and level design to help them improve the quality of their assets performance wise.
- Helped on the port of the PC version to PS4. Worked on multiple areas: console specific optimizations, rendering, build creation, ...

United 1944 - Novarama - PC

- Worked on the areas of rendering, optimization, UI and gameplay. Helped in the development of some tech-heavy gameplay features like volume-aware smokes or custom outlines without postprocessing nor mesh duplication.
- Developed custom rendering solutions to improve rendering times for our project: refactored decal culling in UE, improved LPV in UE4 for low end specs (discarded due to change to UE5) ...
- Implemented multiple tools for art and level teams to report and help fixing all issues that required their attention. Saved hours of benchmarking to spot the cause of GPU performance hits.
- Developed in pair with my companion a serie of game systems to improve both game and rendering thread CPU performance: VFX Custom Dispatcher, Custom Bullet System, Culling Grids for scene complexity management ...
- Fully responsible of the optimization of the project's Slate UI which went from up to 4-5ms to 1 - 1.5ms with periodic spikes due to UI updates. More improvements could have been done but where deemed unnecessary.

Other Titles

Unnamed Project - Novarama - On Development

- Built a custom rendering technique extending UE's render for reducing number of draw calls in a feature required by the project. (Can provide more details on NDA)

Projects

ASIS

- Personal Engine coded in C++.
- Developed with the idea of learning and researching multiple areas of interest: engine architecture, resource management, rendering APIs, terrain generation, animation systems, ...
- My main project in which I work in my spare time. A more in depth explanation of the current features can be found in the repository.
- Probably the project that more closely reflects my coding style, although some parts are still very WIP.

https://gitlab.com/Gabroy/asis

Unreal Engine 4 Custom Third Person Shooter Controller

- Third Person Shooter Controller built with C++.
- Coded to research more about multiple fields: gameplay systems, camera controllers, animation techniques, UE code ...
- Implemented multiple animation techniques: different animation warping techniques, IKs and distance matching.
- Implemented Hierarchical FSMs with states cleanly separated which greatly simplified the addition of new ones. Controller has support for Grounded, Flying, Climbing, Vaulting, Weapon stances in all states, ...
- Implemented both climbing and vaulting systems based on raycasting and with the ability for animation based movement to be ruled by code instead of root motion thanks to Distance matching.
- Repository doesn't contain any images but I can take some if necessary.

https://gitlab.com/Gabroy/unreal-engine-4-tps-controller-and-procedural-animations

Dooshan

- Master's Project.
- Developed together with 6 other members, 3 of them programmers, during the Videogame Development Master at UPF Barcelona School Of Management.
- Project had a very rough development and the end result wasn't great. Nevertheless we implemented some interesting algorithms and techniques.
- I was responsible for the implementation of Cascade Shadow Maps, Screen Space God Rays, Inverse Kinematics, Special Outlines, Parallax Occlusion and many others of the rendering effects both used and discarded.
- Viewed in retrospective, code quality isn't that great and there are some mistakes due to lack of experience but I feel it's still important to show the project nevertheless.

https://gitlab.com/mcv17/Dooshan

Knowledge / Skills

Programming Languages

- C - Intermediate / Advanced
- C++ - Intermediate / Advanced
- C# - Intermediate
- HLSL - Intermediate
- Python - Intermediate
- LUA - Intermediate
- Java - Intermediate
- Javascript - Intermediate

Operative Systems

- Windows
- Linux

Rendering API's

- DirectX 11

Control Version Software

- Git
- Plastic SCM
- Tortoise SVN
- Perforce

Profiles & Debuggers

- Unreal Insights
- RenderDoc
- PIX
- Nvidia Nsight (Begginer Level)
- VTune (Begginer Level)

Others

- Jenkins
- Jira
- HacknPlan
- MongoDB
- ImGUI
- Catch (Unit Testing)

Languages

- **Spanish** - Native
- **Catalan** - Native
- **English** - B2 (Officially)
- **Russian** - A2 - Studying B1