Pedro Boechat

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in linkedin
○ github
stackoverflow
▶ videos

Summary of Qualifications

Senior Programmer
- 14 years in the software industry (9 enterprise, 5 games)
- 4 years in the academia

Computer Graphics Scientist
- 2 papers published in SIGGRAPH Asia

Indie Developer
- $15k prize winner in a nationwide game contest in Brazil

Work Experience

Lead Programmer   Lab42 Games   **Jan 2021 - Present**

- Ported a famous AAA racing title from PC/high-end consoles to the Oculus Quest 2:
  - Prepared the codebase for the target platform: adjusted code for armv8-clang, replaced some SSE/AVX instructions for NEON equivalents, hooked the application layer to the Android NDK, etc.
  - Extended the Vulkan rendering system to support multiple features: subpasses, multiview, FFR, ASW, programatic resolves, MSAA, etc.
  - Restructured the rendering pipeline to better conform to the graphics hardware: collapsed multiple renderpasses into one, removed the depth pre-pass, baked shadows, direct lights, and decals, disabled all post-processing effects (but tonemapping), re-implemented tonemapping as a subpass, etc.
  - Restructured the shader codebase in the forward rendering path: simplified lighting routines, added fake indirect lighting contribution, replaced volumetric fog for fixed-function style fog, etc.
  - Tweaked many core engine systems to better conform to the hardware capabilities: redistributed the CPU load between worker threads, revisited static memory allocators budgets, etc.
  - Integrated two VR APIs: VrApi and OpenXR
  - Extended the engine asset building pipeline to support OBB packaging
  - Integrated ARM's astcenc to the engine's texture building pipeline

Senior Programmer   Codemasters   **Aug 2018 - Dec 2020**

- Worked on the new world editor used in the F1 game series:
  - Decoupled the entity system from the old editor and re-integrated it into the new editor.
  - Increased the robustness of the communication between the editor and the engine.
  - Extended the engine's entity system to support edit-time components.
  - Created a visual editor for the cutscene system scripting language.

WORK EXPERIENCE

Lead Programmer <u>Bongfish</u> **Apr 2017 - Jul 2018**
- Worked on the development of tools to synthesize realistic game scenery from real-world data for the new <u>Microsoft Flight Simulator</u>:
  - Used ML techniques to segment and classify data from aerial images.
  - Built a cloud-based system to run large scale processes.
  - Generated 3D models at run-time using procedural modeling techniques.

Senior Programmer <u>Bongfish</u> **Apr 2016 - Mar 2017**
- Worked on the <u>Frontline game mode</u> for <u>World of Tanks</u>:
  - Helped implementing new game mechanics, such as the respawn system.
  - Refactored important entities, such as the in-battle inventory.

Research Assistant <u>Graz University of Technology</u> **Apr 2014 - Mar 2016**
- Researched GPU programming techniques applied to procedural generation:
  - Co-authored 2 publications in Siggraph Asia (once as <u>first author</u> and another as collaborator).
  - Co-supervised 2 Master's students.
- Developed a procedural scene generator for <u>Bongfish</u> under grant program (Innovationscheck 2016).

Research Assistant <u>Pontifical Catholic University</u> **Mar 2012 - Mar 2014**
- Worked on a virtual training application for oil rig workers:
  - Implemented head-tracking and stereoscopy using 3rd party tools
  - Deployed the application on the <u>largest digital CAVE in Brazil</u>.

Lead Programmer <u>Decatron</u> **Jan 2012 - Feb 2012**
- Worked on an online learning platform for bus transport professionals.

Senior Programmer <u>OWSE</u> **Feb 2011 - Dec 2011**
- Worked on an online maritime logistics system in one of the busiest port terminals in Brazil.

Senior Programmer <u>Message IT</u> **Jan 2009 - Jan 2011**
- Developed the company's application framework and many of the company's internal tools.

Programmer <u>Message IT</u> **Jan 2007 - Dec 2008**
- Worked on an online billing system for Globosat, the biggest Pay-TV company in Brazil.

Programmer <u>Petrobrás Social Security Foundation</u> **Sep 2004 - Dec 2006**
- Worked in the migration of company's loan system to the web.

Education

Graz, Austria	**Graz University of Technology**	**Apr 2014**

Ph.D. in Computer Graphics (Not completed)

Rio de Janeiro, Brazil	**Pontifical Catholic University**	**Jan 2012 - Mar 2014**

M.Sc. in Informatics, Major in Computer Graphics (GPA: 9,1)

Rio de Janeiro, Brazil	**Centro Universitário da Cidade**	**Jan 2008 - Dec 2011**

B.Sc. in Computer Science (Merit scholarship)

Areas of Expertise

Graphics programming, Engine programming, C++, Python, OpenGL, Vulkan, GLSL, HLSL, CUDA, GPGPU, Game development, Software engineering, Test-driven development