

Curriculum Vitae

Ronie Salgado

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Master in Computer Science
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Languages: Spanish (native), English(fluent)

Education and Job Experience

I have had the following education and job experience:

- Universidad de Chile, Chile. 2011-2015. *Licenciado en Ciencias de la Ingeniería, mencion Computación*. Equivalent to a Bachelor in Computer Science degree.
- Universidad de Chile, Chile. 2011-2020. *Ingeniero Civil en Computación*, Civil Engineering in Computing diplome. Equivalent to a Master degree in Software Engineering.
- Universidad de Chile, Chile. 2016-2020. *Magister en Ciencias, mencion Computación*, Master degree in Computer Science.
- Universidad de Chile, Chile. 2024-Present. *Doctorado en Computación*, PhD candidate in Computer Science.
- Research and development engineer at AOne Games SpA in videogame physics and deterministic video game engine technology using Unreal Engine 5.
- Freelance software development consultant at Desromech EIRL, from December 2020. Working as a software consultant in 3D graphics and rendering technology for 3DICC, Virtend software product.
- Nine months as a research and development engine in RMoD research team in INRIA Lille, France, starting at March 2020.
- Two years of work in AOne Games SpA.

Design of the low-level architecture and foundations for the game logic of Omen of Sorrow, a fighting video game for PS4. The game logic for this video game has a strong requirement on full determinism, and the ability of rolling back the video game previous state. This requirement comes from GGPO, a networking library that is good on hiding latency. This networking feature is in the public advertisement of the videogame.

Design and implementation of a matchmaking system for Omen of Sorrow. The client for this system is written in C++, and the server is written in Erlang. This matchmaking system is a property of AOneGames SpA.

- A five months internship in RMoD research team in INRIA Lille, France, starting at April 2016.
- I did a numerical computation program using arbitrary floating point precision that was used for the paper *Traceability and computerization of alcoholometric tables*, paper presented in the July 2015 Bulletin of the *Organisation Internationale de Métrologie Légale*. http://www.oiml.org/en/publications/bulletin/pdf/oiml_bulletin_july_2015.pdf
- One and half month internship in ObjectProfile, Santiago de Chile, during January 2015. Here I did a real time volummetrical renderer for astronomical data.
- One month internship in RMoD reasearch team in INRIA Lille, France, during January 2014.

Publications

- *The Design and Implementation of an Extensible System Meta-Programming Language*. Technical Report. <https://arxiv.org/pdf/2309.15416>
- *Hunting and Camping: in a singularity*. Short videogame which is a technical demo for the Sysmel Programming Language published on the Nintendo 3DS.
- *Towards a Smart Data Processing and Storage Model*. IWST 2020. <https://esug.github.io/2020-Conference/cfpIWST2020.html>
- *Inspecting Block Closures: To Generate Shaders for GPU Execution*. IWST 2019. Best paper award first place. <https://esug.github.io/2019-Conference/cfpIWST2019.html>
- *Pharo Git Thermite: A Visual Tool for Deciding to Weld a Pull Request*. IWST '17 Proceedings of the 12th edition of the International Workshop on Smalltalk Technologies. <https://doi.org/10.1145/3139903.3139916>

- *CuboidMatrix: Exploring Dynamic Structural Connections in Software Components Using Space-Time Cube*. 2016 IEEE Working Conference on Software Visualization (VISSOFT). <https://doi.org/10.1109/VISSOFT.2016.17>
- *Lowcode: Extending Pharo with C Types to Improve Performance*. IWST'16 Proceedings of the 11th edition of the International Workshop on Smalltalk Technologies. <https://doi.org/10.1145/2991041.2991064>
- *Profiling Kernels Behavior to Improve CPU / GPU Interactions*. Proceedings of the 37th International Conference in Software Engineering, Florence. <http://dx.doi.org/10.1109/ICSE.2015.239>

Talks

- *Virtual Reality in Pharo: Challenges and Demo* Talk given at ESUG 2024. <https://www.youtube.com/watch?v=gIo7LSLvSG8>
- *Constructing 3D Scenes with WODEN Engine* Talk given at Smalltalks 2019. <https://youtu.be/T73G2cLkfBE>
- *Constructing 3D Scenes with WODEN Engine* Talk given at ESUG 2019. <https://youtu.be/zJAjDSg-nvU>
- *Woden 2: Developing a modern 3D graphics engine in Smalltalk*. Talk given at ESUG 2016 about the architecture behind the design of Woden 2 (Previous version of Woden Engine). <https://youtu.be/fnPv7jtVY8U>

Awards

- Frist Prize ESUG 2024 Innovation Technology Award with *Woden VR*.
- IWST 2019 best paper award first place with *Inspecting Block Closures: To Generate Shaders for GPU Execution*.
- First Prize ACM ICPC Chile Programming Competition, November 2015. This provided a classification for the ACM ICPC 2016 World Finals to be held in Phuket, Thailand.
- Distinguished student award in the Department of Computer Science of the University of Chile, 2015.
- Selected for the ICSE 2015 Student Research Competition.
- First Prize ACM ICPC Chile Programming Competition, November 2014.
- Third Prize ESUG 2014 Innovation Technology Award, August 2014.
- Second Prize ACM ICPC Chile Programming Competition, November 2013.

Academic Experience

- *WODEN Engine*, I am making the current version of WODEN Engine, a 3D graphics engine made in the Pharo programming language. This version of Woden uses an abstraction layer above the Vulkan and Metal low-level graphics API for rendering. The main objective of the Woden engine is on reducing the boundary between the CPU and GPU programming realms. Woden Engine is available under the MIT License. Woden examples are available at <https://github.com/desromech/woden-core-examples>.
- *Woden (original version)*, I am the main architect of the original version of Woden, a 3D graphics engine made in the Pharo programming language. Woden received a third place innovation technology award in ESUG 2014. Woden is available under the MIT License, available on <http://www.smalltalkhub.com/#!/~ronsaldo/Woden>.
- *Roassal 3d*, I am the main architect of Roassal 3d, an agile visualization engine to build 3d visualization. Roassal is available under the MIT License, available on <http://www.smalltalkhub.com/#!/~ronsaldo/roassal3d>. Roassal 3d is currently being used by INRIA and Synectique. Roassal 3d is developed as part of the Fondecyt project 1120094, *ALMA: Analyses and Tools for Monitoring and Improving Software Quality*.
- *Introduction to Computing*, 2013 first term teaching assistant at the Universidad de Chile.
- *Algorithms and Data Structures*, 2013 second term teaching assistant at the Universidad de Chile.
- *Profiling Kernels Behavior to Improve CPU / GPU Interactions*, ICSE (2) 2015: 754-756.

Programming Languages

I have an expertise in the following programming languages: C/C++, Python, Erlang, Smalltalk, specially the Pharo implementation.

Technologies

I am familiar with the following technologies:

- Unreal Engine 5.
- Unreal Engine 4.
- LLVM compiler construction framework.
- OpenSmalltalk virtual machine internals.

- The workings and internal working of a virtual machine.
- Vulkan low-level graphics API.
- Metal low-level graphics API.
- Modern OpenGL graphics API.
- Development for some video game consoles (PS4, Xbox One, 3DS).
- Roassal Agile Visualization framework.

Other personal projects

I am working in the following personal projects:

- *AbstractGPU*. An abstraction layer above low-level graphics APIs with backends for Vulkan, Direct3D 12 and Metal: <https://github.com/ronsaldo/abstract-gpu>