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Undergraduate Computer Science student passionate about physically-based animation, realistic rendering, signal and image processing.

## Education

University of Southern California, Los Angeles Fall 2015 – Spring 2016  
Viterbi School of Engineering

Exchange Program of Computer Science, Cumulative GPA 3.5/4.0  
Full Scholarship awarded by the Brazilian Government

Federal University of Pernambuco, Recife, Brazil Spring 2013 – Spring 2018  
Center of Informatics

Bachelor of Computer Engineering (5-year program), Cumulative GPA 8.32/10.0

## Work Experience

Research Intern at USC Computer Graphics Lab Summer 2016  
University of Southern California, Los Angeles

- a. Study State-of-Art techniques on physically-based animation (Continuum Mechanics, Finite Element Method and Model Reduction)
- b. Implement two recent papers in C++ ([Projective Dynamics](#) and [Towards Real-time Simulation of Hyperelastic Materials](#))
- c. Develop and assess new optimization-based techniques for simulating deformable objects

Research Assistant at Virtual Reality and Multimedia Group Spring 2013 – Summer 2015  
(GRVM) Fall 2016  
Federal University of Pernambuco, Recife, Brazil

- a. Research on nonlinear optimization problems for computer vision applications
- b. Research on physical modeling for curvature estimation of pipes in offshore oil production
- c. Team development in C++ of software for Brazilian oil industry
- d. Apply Machine Learning algorithms to classify dangerous configurations of oil pipes

Teaching Assistant of Linear Algebra Fall 2013  
Teaching Assistant of Operating Systems Spring 2014  
Teaching Assistant of Probability and Statistics Fall 2015 – Spring 2016  
Federal University of Pernambuco, Recife, Brazil

- a. Teach in discussion sessions
- b. Conceive and grade tests, homework and projects

## Personal Projects

[See all projects on GitHub](#)

### gl-oo-interface in C++

March 2016

An OpenGL 4.0 Object-Oriented wrapper that includes:

- a. Mesh manipulation (automatic VBO, EBO and VAO management for custom attributes)
- b. Shader manipulation and renderer module: wireframe, phong shading, normal mapping
- c. Tools: camera, transformations, useful meshes, GLUT interface
- d. Support for multiple textures on shaders

### Ray Tracer in C++

April 2016

Main Features

- a. Gradient-based adaptive anti-aliasing, multi-threading implementation
- b. Reflection and refraction using Snell's Law and Fresnel's Equations
- c. 3D-object loading and rendering, custom camera positioning

### Rollercoaster Simulator in C++

March 2016

Main Features

- a. Uses OpenGL 4.0 to render all scene objects from scratch (rollercoaster, sky dome)
- b. The railway model is generated algorithmically from Catmull-Rom splines
- c. The user can edit the spline in real-time to generate new tracks
- d. Provides a realistic implementation of phong shading model

### Height map Renderer in C++

March 2016

Main Features

- a. Builds a 3D-surface from an input image in greyscale
- b. Renders the height map as a wireframe mesh or solid mesh using phong shading model

### Webphysics in JavaScript

December 2015

An interactive 2D-physics simulator that features:

- a. Multiple particles and strings
- b. Connectors (springs and dampers) between particles and strings
- c. Explicit Euler Integrator for updating the timestep

## Skills

Programming Languages

C/C++, Python, Matlab, JavaScript, Java

Tools and Libraries

OpenGL 4.0, Eigen Library, Ceres-Solver, Matlab, OpenCV

Important Coursework

Computer Graphics, Digital Signal Processing,  
Linear Systems, Linear Algebra, Probability and Statistics,  
Professional C++, Software Engineering

## References

References available on request.