

PUBLICATIONS

1. BOOKS

1. *GPU Ray Tracing in Non-Euclidean Spaces*,
Morgan ClayPool Lecture Series, 2021.
Tiago Novello, Vinicius da Silva and Luiz Velho.
2. *Intrinsic Visualization in the Thurston's Geometries*.
33rd Brazilian Mathematical Colloquium, 2021.
Tiago Novello, Vinicius da Silva and Luiz Velho.
3. *Proceedings of the Live Coding Music Seminar*.
IMPA, 2019.
Luiz Velho and Vitor Rolla.
4. *OBSERVATOR!O 2016 - Experiências em Deep Learning*
IMPA / VISGRAF Lab, 2016
Luiz Velho, Juliana Giannella.
5. *Um Olhar nos Espaço de Dimensão 3*
IMPA / MAST, 2015
Luiz Velho, Pierre Berger, Pierre-Yves Fave and Juliana Giannella.
6. *From Fourier Analysis to Wavelets*
Springer Verlag, IMPA Monographs Series, 2015
Luiz Velho, Jonas Gomes.
7. *Design and Implementation of 3D Graphics Systems*
Taylor and Francis, 2012
Luiz Velho, Jonas Gomes and Mario Costa Souza.
8. *Computer Graphics: Theory and Practice*
Taylor and Francis, 2011
Luiz Velho, Jonas Gomes and Mario Costa Souza.
9. *Métodos Matemáticos e Computacionais em Musica*
XXXII CNMAC - Congresso Nacional de Matemática Aplicada e Computacional, 2009
Luiz Velho, Marcelo Cicconet, Sergio Krakowski, Paulo César Carvalho.
10. *Compressive Sensing*
27 Colóquio Brasileiro de Matemática, IMPA, 2009
Luiz Velho, Adriana Schulz, Eduardo Silva.
11. *Image Processing for Computer Graphics and Vision*
Springer Verlag, 2008
Luiz Velho, Alejandro Frery and Jonas Gomes.
12. *Mathematical Optimization in Graphics and Vision*
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Luiz Velho, Paulo Carvalho, Luiz Henrique Figueiredo, Jonas Gomes
13. *High Dynamic Range Image Reconstruction*
Morgan and Claypool Publishers, 2008
Luiz Velho, Asla Sa, Paulo Cezar Carvalho
14. *Fotografia 3D*
25 Colóquio Brasileiro de Matemática, IMPA, 2005
Luiz Velho, Paulo César Carvalho, Esdras Soares, Anselmo Montenegro, Asla Sá, Adelailson Peixoto e Luiz Rivera.
15. *Fundamentos da Computação Gráfica*
IMPA, Serie Computação e Matemática, 2004
Luiz Velho, Jonas Gomes.
16. *Métodos de Otimização em Computação Gráfica*
Notas de Curso, IMCA 2003
Luiz Velho, Paulo Cezar Carvalho.
17. *Mathematical Optimization Methods in Graphics and Vision*
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Luiz Velho, Paulo Cezar Carvalho
18. *Tutorial on Mathematical Optimization in Graphics and Vision*
SIGGRAPH Tutorial Notes, 2002
Luiz Velho, Paulo Cezar Carvalho

19. *Implicit Objects for Computer Graphics*
Springer Verlag, 2002
Luiz Velho, Jonas Gomes e Luiz Henrique de Figueiredo
20. *Sistemas Gráficos 3D*
IMPA - SBM, 2001
Luiz Velho, Jonas Gomes
21. *Otimização e Aplicações em Computação Gráfica*
XXII CNMAC - Congresso Nacional de Matemática Aplicada e Computacional, 2000
Luiz Velho, Jonas Gomes, Paulo César Carvalho e Luiz Henrique Figueiredo
22. *Image Processing and Wavelets*
First Latin American Congress of Mathematicians, UMACLA, 2000
Luiz Velho, Jonas Gomes e Paulo César Carvalho
23. *Introdução aos Espaços de Escala*
Escola de Computação 2000
Luiz Velho, Ralph Teixeira e Jonas Gomes (colaborador)
24. *Métodos de Otimização e suas Aplicações em Computação Gráfica*
22 Colóquio Brasileiro de Matemática, IMPA, 1999
Luiz Velho, Jonas Gomes, Paulo César Carvalho e Luiz Henrique Figueiredo
25. *Computação Gráfica: Volume 1*
IMPA - SBM, 1999
Luiz Velho, Jonas Gomes
26. *From Fourier Analysis to Wavelets*
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Luiz Velho, Jonas Gomes
27. *Warping and Morphing of Graphical Objects*
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28. *Wavelets e Aplicações em Computação Gráfica*
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29. *Image Processing for Computer Graphics*
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30. *Warping and Morphing of Graphical Objects*
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31. *Deformação e Metamorfose de Objetos Gráficos*
20 Colóquio Brasileiro de Matemática, IMPA, 1995
Luiz Velho, Jonas Gomes, Bruno Costa e Lúcia Darsa
32. *Computação Gráfica: Imagem*
Coleção Computação e Matemática, SBM / IMPA, 1995
Luiz Velho, Jonas Gomes
33. *Introdução à Computação Gráfica*
Course Notes, IMPA, 1994
Luiz Velho, Jonas Gomes e Paulo Roma Cavalcante
34. *Implicit Objects in Computer Graphics*
Série Monografias em Matemática, IMPA, 1992
Luiz Velho, Jonas Gomes
35. *Conceitos Básicos de Computação Gráfica*
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Luiz Velho, Jonas Gomes

2. BOOK CHAPTERS

1. chapter 33 - *Real-Time Rendering of Complex Fractals*.
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Tiago Novello, Vinicius da Silva, Helio Lopes and Luiz Velho.

2. chapter *Video and Virtual Reality*.
in "Illustrating Mathematics", American Mathematical Society, 2020.
Tiago Novello, (collaborators) Vinicius da Silva, and Luiz Velho.
3. *Visual Representations for Music Understanding Improvement*,
In Lecture Notes in Computer Science. Springer Verlag, 2018.
Luiz Velho, Leandro Cruz, Vitor Rolla, Juliano Kestenberg
4. *Virtual Emotion to Expression: A Comprehensive Dynamic Emotion Model to Facial Expression Generation Using the MPEG-4 Standard*
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Luiz Velho, Paula Rodrigues, Asla Sá
5. *Togetherness: How Real is that Presence*
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6. *Projective Texture Atlas and Applications*
in Curves and Surfaces: Avignon 06, T. Lyche,, L. Schumaker, (editors), Nashboro Press, Brentwood, 2007
Luiz Velho, Jonas Sossai
7. *Point Cloud Denoising*
in Geometric Design and Computing - Seattle 03, Mike Neatmu, (editor), SIAM Press, 2004
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8. *Adaptive Mesh Extraction using Simplification and Refinement*
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9. *A Generic Programming Approach to Multiresolution Spatial Decompositions*,
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10. *Generalizing the C4 Four-directional Box Spline to Surfaces of Arbitrary Topology*
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11. *Virtual Sets: Concepts and Trends*
in *Design and Management of Multimedia Information Systems: Opportunities and Challenges*, Idea Group, 2000
Luiz Velho, Lucinelma Pessoa Albuquerque e Jonas Gomes
12. *Computação Gráfica: Uma Proposta de Plano Pedagógico*
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13. *Graphical Objects*
in *II Prêmio Compaq de Estimulo à Pesquisa e Desenvolvimento em Informática*,
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Luiz Velho, Jonas Gomes, Bruno Costa e Lucia Darsa
14. *Visualização e Computação Gráfica*
in, Diana Domingues (ed.), *Arte no Século XXI*, Editora UNESP, p. 113-117, 1997
15. *Algorithmic Modeling*
in J. Gomes (org), *Modeling in Computer Graphics*
Siggraph Course Notes, p. 98-134, 1993

3. ARTICLES IN SCIENTIFIC JOURNALS

1. *Predicting Dengue Outbreaks in Brazil with Manifold Learning on Climate Data*.
Expert Systems With Applications, 2021.
Caio Souza, Pedro Maia, Lucas Stolerma, Vitor Rolla and Luiz Velho.
2. *A Simple and Complete Discrete Exterior Calculus on General Polygonal Meshes*.
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Lenka Ptackova and Luiz Velho.
3. *Data Visualization in the Time of Coronavirus*.
SDRJ - Strategic Design Research Journal, 2, 2021.
Special Issue on Design contributions for the COVID-19 global emergency.
Julia Giannella and Luiz Velho.
4. *Self-similarity of Classical Music Networks*.
Fractals, 2020.
Vitor Rolla, Pablo Riera, Pedro Souza, Luiz Velho, and Jorge Zubelli.

5. *Global Illumination of Non-Euclidean Spaces*.
Computers and Graphics, SIBGRAPI Special Edition, 2020.
Tiago Novello, Vinicius da Silva, and Luiz Velho.
6. *Visualization of Nil, Sol, and $SL_2(\mathbb{R})$ Geometries*.
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Tiago Novello, Vinicius da Silva, and Luiz Velho.
7. *Experiments in Situated Participatory Virtual Reality*.
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8. *TensorPose: Real-time pose estimation for interactive applications*.
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9. *Visualizacao de Colecao de Imagens*.
Dialogo com a Economia Criativa, 2019.
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10. *VR Tour: Guided Participatory Meta-Narrative for Virtual Reality Exploration*.
Revista GEMInIS, 2019.
Luiz Velho, Julia Giannella, Djalma Lucio, and Vinicius Silva.
11. *The complexity of classical music networks*,
Europhysics Letters, 2018,
Luiz Velho, Vitor Rolla, Juliano Kestenberg.
12. *Hough Transform for Real-Time Plane Detection in Depth Images*,
Pattern Recognition Letters, 2018.
Luiz Velho, Eduardo Vera Sousa, Djalma Lucio, Leandro Fernandes
13. *Local Moebius Transformations Applied to Omnidirectional Images*.
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14. Automatic reconstruction of ancient Portuguese tile panels
IEEE Computer Graphics and Applications, 2016.
Luiz Velho, Fernanda Andalo, Gustavo Carneiro, Gabriel Taubin, Siome Goldenstein
15. *Sketch-Based Modeling and Adaptive Meshes*
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Luiz Velho, Emilio Brazil, Ronan Amorim, Mario Costa Souza and Luiz Henrique Figueiredo
16. *Real-time Correction of Panoramic Images using Hyperbolic Moebius Transformations*
Journal of Real-Time Image Processing, 2015.
Luiz Velho, Luis Penaranda, and Leonardo Sacht
17. *Facing the High-dimensions: Inverse Projection Luiz Velho, Radial Basis Functions*
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Luiz Velho, Elisa Portes, Emilio Vital Brazil, Jesus Mena-Chalco, Luis Gustavo Nonato, Faramarz Samavati, Mario Costa Sousa
18. *ChoreoGraphics: An Authoring Tool for Dance Shows*
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Luiz Velho, Adriana Schulz, Wojciech Matusik
19. *An image-space algorithm for immersive views in 3-manifolds and orbifolds*
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Luiz Velho, Pierre Berger, Alex Laier
20. *Adaptive multi-chart and multiresolution mesh representation*
Computers and Graphics, 38:332–340, February 2014.
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21. *Efficient 3D object recognition using foveated point clouds*
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22. *Virtual Table-Teleporter: Image Processing and Rendering for Horizontal Stereoscopic Display*
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23. *Conic-like subdivision curves on surfaces*
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24. *Interactive 3D Caricature from Harmonic Exaggeration*
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25. *Exoskeleton: Curve Network Abstraction for 3D Shapes*
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Luiz Velho, Fernando de Goes, Siome Klein, Mathieu Desbrun
26. *Shape and Tone Depiction for Implicit Surfaces*
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28. *Simplicial Diffeomorphisms*
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29. *Hermite Radial Basis Functions Implicit*
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30. *Subdivision de courbes sur les surfaces avec controle de la longueur d'arc*
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31. *On 2D Solid Alpha-Complexes of Poisson Disc Samplings*
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32. *Topological Mesh Operators*
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33. *3D Face Computational Photography Using PCA Spaces.*
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Luiz Velho, Jesus Mena-Chalco, Ives Macedo, and Roberto Cesar.
34. *A New Construction of Smooth Surfaces from Triangle Meshes Using Parametric Pseudo-Manifolds.*
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35. *Affine Skeletons and Monge-Ampère Equations*
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36. *Learning good views through intelligent galleries*
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40. *A Cybernetic Observatory Based on Panoramic Vision*
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41. *A Simple and Flexible Framework to Adapt Dynamic Meshes*
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73. *Hierarchical Generalized Triangle Strips*
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4. TECHNICAL PAPERS IN CONFERENCE PROCEEDINGS

1. *Semantic graph attention networks and tensor decompositions for computer vision and computer graphics.*
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3. *Deep Neural Networks for Implicit Representations of 3D Scenes.*
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7. *Immersive Visualization of the Classical Non-Euclidean Spaces using Real-Time Ray Tracing in VR.*
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8. *Latent-Space Laplacian Pyramids for Adversarial Representation Learning with 3D Point Clouds.*
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10. *The Tempest.*
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13. *Dois métodos eficientes para criação de miniaturas virtuais sobre telas horizontais a partir de imagens*
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