Alexandre Chapiro

I am interested in perception and computer graphics, especially anything involving computational display and psychophysics. Prior work involved perceptual metrics, brightness and color, stereo 3D, and display topics like virtual and augmented reality, frame rate, high dynamic range and more.

Professional Experience

2020-now **Facebook Reality Labs | Applied Perception Science Team**

Senior Researcher — Advance understanding of perception through targeted research and publications. Apply learnings to product paths, work cross-functionally to support product needs

2018-2020 **Apple Inc., Cupertino | Core Display Incubation Team**

Senior Display Engineer — Helped identify and cultivate new display technologies and associated experiences to surprise and delight Apple product users

2017-2018 **Dolby Laboratories | Applied Vision Science Group**

Senior Researcher — Conducted research and obtained experimental results on perceptual factors, mainly focusing on cinema and home theater applications

2011-2016 **Disney Research, Zurich | Stereo and Displays Group**

Researcher — In parallel with my doctoral studies, conducted research on display and perception topics resulting in four patent applications and several publications

Education

2011-2015 **PhD in Computer Science | Computer Graphics Laboratory**

institution — Federal Institute of Technology Zurich (ETHZ), Zurich, Switzerland

thesis title — *Perceptual Enhancements for Novel Displays*

supervisors — Prof. Markus Gross. Co-Advisor: Dr. Aljoša Smolić

2010-2011 **Masters' Degree in Applied Mathematics | Visgraf Laboratory**

institution — Institute of Pure and Applied Mathematics (IMPA), Rio de Janeiro, Brazil

thesis title — *Improving Mobile Video*

supervisors — Prof. Paulo Cezar Pinto Carvalho. Co-Advisor: Prof. Luiz Velho

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alexandre-chapiro-a8342520

2007–2009 **Undergraduate Degree in Mathematics**
institution Federal University of Juiz de Fora (UFJF), Juiz de Fora, Brazil
thesis title *An Introduction to Degree Theory*
supervisors Prof. Luiz Faria, Marcelo Bernardes Vieira

2016-2016 **Dolby Laboratories | Applied Vision Science Group**
Intern Conducted research on the human visual system guided by business unit needs

Teaching

Feb.2014 to Jun.2014 **Teaching assistant**, *Math. Foundations of Computer Graphics and Vision*, ETHZ.
Graduate class teaching mathematical techniques in visual computing

Feb.2015 to Jun.2015 **Teaching assistant**, *Math. Foundations of Computer Graphics and Vision*, ETHZ.

Feb.2012 to Jun.2012 **Teaching assistant**, *Informatik 1*, ETHZ.
Undergradute class teaching fundaments of informatics to engineering students

Feb.2013 to Jun.2013 **Teaching assistant**, *Informatik 1*, ETHZ.

Academic Honors

2015 Second youngest PhD to graduate from the CS department at ETH Zurich at 25

2011 Finished 2-year Master's program at the National Institute of Pure and Applied Mathematics in 18 months

2009 Finished 4-year undergraduate program in Mathematics at the Federal University of Juiz de Fora in 3 years with the highest GPA in the graduating class

2007 Ranked 1st in admission examinations, Federal University of Juiz de Fora

2006 Gold Medalist, Brazilian Astronomy Olympiad

2006 Gold Medalist, Brazilian Mathematics Olympiad for Public School Students. 95th place among approximately 5.3 million students

2005 Gold Medalist, Brazilian Mathematics Olympiad for Public School Students. 9th place among approximately 3.8 million students

Academic Service

Commitee **2021**, *SIBGRAPI Journal Track International Program Committee*.
2019, *SIBGRAPI Journal Track International Program Committee*.
2018, *SIBGRAPI International Program Committee*.

Reviewing **2020**, *Eurographics, IEEE TIP*.
2019, *SIGGRAPH, Eurographics, IEEE TIP*.
2018, *SIBGRAPI, Eurographics*.
2017, *SIGGRAPH, Pacific Graphics,IEEE TIP*.
2016, *SIGGRAPH Asia, Graphics Interface,IEEE TIP,JOSA*.
2015, *SIGGRAPH, SIGGRAPH Asia, ICIP,IEEE CG&A, IEEE TVCG*.

2014, *Pacific Graphics,CG Forum*.

2012, *3DV*.

Awards and Funding

Oct.2011 to Oct.2013 **Participant**, *European Commission Program FP7*.

Mar.2010 to Jul.2011 **Awarded**, *Master program fellowship, CNPq*.

Jan.2009 to Dec.2009 **Awarded**, *Undergraduate research scholarship, FAPEMIG*.

Jan.2008 to Dec.2008 **Awarded**, *Undergraduate research scholarship, CNPq*.

Mar.2007 to Jan.2008 **Awarded**, *Scholarship for winners OBMEP 2006 mathematics olympics, CNPq*.

Mar.2006 to Jan.2007 **Awarded**, *Scholarship for winners OBMEP 2005 mathematics olympics, CNPq*.

Jan.2005 to Dec.2005 **Awarded**, *High-school research scholarship, CNPq*.

- Obs.: CNPq is the Brazilian national funding agency. FAPEMIG is the funding agency for the state of Minas Gerais, Brazil

Invited Talks and Presentations

invited talk: **Echoes of SIGGRAPH'20**.
IMPA 2020, Brazil, hosted by Luiz Velho

paper talk: **A Luminance-Aware Model of Judder Perception**.
SIGGRAPH 2020

invited talk: **Perceptual Enhancements for Novel Displays**.
TU Delft 2019, Netherlands, hosted by Elmar Eisemann

invited talk: **Cinematic Motion**.
NAB show 2018, Las Vegas, invited by Jaclyn Pytlarz

invited talk: **Perceptual Enhancements for Novel Displays**.
IBM 2017, Rio de Janeiro, hosted by Emilio Vital Brazil

invited talk: **Computer Graphics**, *(popular lecture)*.
IF Sudeste MG 2017, Juiz de Fora, hosted by Elena Konstantinova

invited talk: **Computer Graphics**, *(popular lecture)*.
IF Sudeste MG 2016, Rio Pomba, hosted by Lucas Lattari

invited talk: **Perceptual Enhancements for Novel Displays**.
Dolby Laboratories 2016, Sunnyvale, hosted by Timo Kunkel

invited talk: **Perceptual Enhancements for Novel Displays**.
Technicolor 2015, Rennes, hosted by Erik Reinhard

invited talk: **Perceptual Enhancements for 3D Displays**.
Max Planck Institut 2015, Saarbrucken, hosted by Piotr Didyk

paper talk: **Stereo from Shading**.
EGSR 2015

paper talk: **Perceptual Evaluation of Cardboarding in 3D Content Visualization**.
SAP 2015

paper talk: **Optimizing Stereo-to-Multiview Conv. for Autostereo. Displays**.
Eurographics 2015

Languages

Portuguese	Fluent	*Native speaker*
Russian	Fluent	*Native speaker*
English	Fluent	*TOEFL iBT 117/120, Cambridge FCE and CAE exams with A grades*
Spanish	Fluent	*3 years of school in Spain*
French	Advanced	*Alliance Française DELF diplome - 2005*

Publications

Papers

FovVideoVDP: A visible difference predictor for wide field-of-view video,
SIGGRAPH , 2021,
Mantiuk, Denes, Chapiro, Kaplanyan, Rufo, Bachy, Lian, Patney

A Luminance-Aware Model of Judder Perception,
ACM Transactions on Graphics (TOG) , 2019 (presented at SIGGRAPH'20),
Chapiro, Atkins, Daly

Influence of Screen Size and Field of View on Perceived Brightness,
ACM Transactions on Applied Perception (TAP) , 2018,
Chapiro, Kunkel, Atkins, Daly

Unfolding the 8-bit Era,
European Conference on Visual Media Production 2015,
Zund, Berard, Chapiro, Schmid, Ryffel, Bermano, Gross, Sumner

Art-Directable Continuous Dynamic Range Video,
Compters & Graphics, Elsevier, 2015,
Chapiro, Aydin, Stefanoski, Croci, Smolic, Gross

Video Content and Structure Description Based on Keyframes, Clusters and Storyboards,
IEEE International Workshop on Multimedia Signal Processing, Xiamen-China, 2015,
Junyent, Beltran, Farre, Pont-Tuset, Chapiro, Smolic

Stereo from Shading,
Eurographics Symposium on Rendering, Darmstadt-Germany, 2015. (E&I track),
Chapiro, O'Sullivan, Jarosz, Gross, Smolic

Perceptual Evaluation of Cardboarding in 3D Content Visualization,
ACM Symposium on Applied Perception, Vancouver-Canada, 2014. (Short paper),
Chapiro, Diamanti, Poulakos, O'Sullivan, Smolic, Gross

Optimizing Stereo-to-Multiview Conversion for Autostereoscopic Displays,
Eurographics, Strasbourg-France, 2014,
Chapiro, Heinzle, Aydin, Poulakos, Zwicker, Smolic, Gross

Towards Mobile HDR Video,
Eurographics, Llandudno-UK, 2011. (Extended abstract)
Castro, Chapiro, Cicconet, Velho

Detection of High Frequency Regions in Multiresolution,
International Conference on Image Processing, Cairo-Egypt, 2009.
Mota, Perez, Castro, Chapiro, Vieira

High Frequency Assessment from Multiresolution Analysis,
International Conference on Computational Science, Baton Rouge-USA, 2009
Castro, Perez, Mota, Chapiro, Vieira, Freire

Patents

Frame rate conversion metadata,
US Patent US11019302 B2, 2020
Pytlarz, Atkins, Pieri, Chapiro, Daly

Luminance adaption to minimize discomfort and improve visibility,
US Patent US 20200202814 A1, 2020
Chapiro, Atkins, Daly

Virtual reality cinema-immersive movie watching for headmounted displays,
US Patent US10769754 B2, 2020
Chapiro, Atluru, Chun, Haricharan, Rozzi, Ruggieri, Ninan

Systems and methods for automatic key frame extraction and storyboard interface generation for video,
US Patent US9552520 B1, 2017 (Related to our 2015 paper)
Smolic, Martin, Pont-Tuset, Chapiro, Guiu

Methods for creating and distributing art-directable continuous dynamic range video,
US20160353164 A1, 2016 (Related to our 2015 paper)
Smolic, Chapiro, Croci, Aydin, Stefanoski, Gross

Visual salience of online video as a predictor of success,
US20170061235 A1, 2015 (Related to our 2015 poster)
Frey, Accardo, Sumner, Huber, Chapiro

Depth modification for display applications,
US20150348273 A1, 2015 (Related to our 2014 paper)
Chapiro, Aydin, Poulakos, Heinzle, Smolic

Three additional patents currently in review

Book Chapters

Discrete Wavelets on Edges,
InTech open publisher, 2011
Chapiro , Knop, Mota, Perez, Bernardes, Freire

Posters

The Influence of Visual Salience on Video Consumption Behavior
A Survival Analysis Approach,
ACM Web Science, Oxford-United Kingdom, 2015
Huber, Scheibehenne, Chapiro, Frey, Sumner

Filter Based Deghosting for Exposure Fusion Video,
SIGGRAPH, Vancouver-Canada, 2011. *Student Research Competition Semi-Finalist*
Chapiro, Cicconet, Velho

Towards Mobile HDR Video,
International Conference on Computational Photography, Pittsburg-USA, 2011
Castro, Chapiro, Cicconet, Velho

Mountain's Pass Theorem,
Minas-Gerais Meeting of Partial Diferential Equations, Itajuba-Brazil, 2009
Chapiro, Pereira

Other

Image Domain Warping for Advanced 3D Video Applications,
IEEE COMSOC MMTC E - Letter, 2014. (Invited letter)
Smolic, Wang, Lang, Stefanoski, Farre, Greisen, Heinzle, Schaffner,Chapiro, Sorkine-Hornung, Gross

Computational Photography,
IMPA, Rio de Janeiro-Brazil, 2011. (Technical report)
Castro, Chapiro, Velho