Alexandre Chapiro

I am interested in applied perception and psychophysics as related to computational display, as well as image and video processing techniques. In particular, I've worked on topics in stereo 3D, high dynamic range, brightness and color, frame rate and motion, user experience and virtual reality.

Professional Experience

2020-now	**Facebook Reality Labs**
Senior Researcher	Conduct research and explore topics on applied perception, with special focus on immersive displays
affiliation	Applied Perception Science Team, managed by Kevin MacKenzie
2018-2020	**Apple Inc., Cupertino**
Senior Display Engineer	Helped identify and cultivate new display and image processing technologies and experiences for future Apple products
affiliation	Core Display Incubation Team, managed by Nicolas Bonnier
2017-2018	**Dolby Laboratories, Sunnyvale**
Senior Researcher	Conducted research and obtained experimental results on human perception factors relevant to business needs
affiliation	Applied Vision Science group, managed by Robin Atkins
2011-2016	**Disney Research, Zurich**
Researcher	Conducted research on novel displays, stereo 3D, high dynamic range, high framerate and human perception resulting in four patent applications and several publications
affiliation	Stereo and Displays group, managed by Aljoša Smolić

Education

2011-2015	**PhD in Computer Science**
institution	Federal Institute of Technology Zurich (ETHZ), Zurich, Switzerland
thesis title	*Perceptual Enhancements for Novel Displays*
affiliation	Computer Graphics Laboratory
supervisors	Prof. Markus Gross. Co-Advisor: Dr. Aljoša Smolić

2010-2011	**Masters' Degree in Applied Mathematics**
institution	Institute of Pure and Applied Mathematics (IMPA), Rio de Janeiro, Brazil
thesis title	*Improving Mobile Video*
affiliation	Visgraf laboratory
supervisors	Prof. Paulo Cezar Pinto Carvalho. Co-Advisor: Prof. Luiz Velho
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*
affiliation	Computer Graphics Laboratory
supervisors	Prof. Luiz Faria, Marcelo Bernardes Vieira
2016-2016	**Dolby Laboratories, Sunnyvale**
Intern	Conducted research on the human visual system guided by business unit needs
affiliation	Applied Vision Science group, managed by Robin Atkins

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.*
	o 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
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*
German	Beginner	*Approximately A2 level*

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

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Patents

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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