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

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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 **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

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*

References

Prof. Dr. Markus Gross,
Director of Disney Research Zurich. Full Professor, ETH Zurich.

Prof. Dr. Aljoša Smolić,
SFI Research Professor of Creative Technologies, Trinity College Dublin.

Scott Daly,
Senior Member of Science Staff, Dolby Laboratories, Sunnyvale.

Publications

Papers

A Luminance-Aware Model of Judder Perception,
ACM Transactions on Graphics (TOG) , 2019,
Chapiro, A., Atkins, R., Daly, S.

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

Unfolding the 8-bit Era,
European Conference on Visual Media Production 2015,
Zund, F., Berard, P., Chapiro, A., Schmid, S., Ryffel, A., Bermano, A., Gross, M., Sumner, R.

Art-Directable Continuous Dynamic Range Video,
Compters & Graphics, Elsevier, 2015,
Chapiro, A., Aydin, T., Stefanoski, N., Croci, S., Smolic, A., Gross, M.

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

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

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

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

Towards Mobile HDR Video,
Eurographics, Llandudno-UK, 2011. (Extended abstract)
Castro, T.K., Chapiro, A., Cicconet, M., Velho, L.

Detection of High Frequency Regions in Multiresolution,
International Conference on Image Processing, Cairo-Egypt, 2009.
Mota, V.F., Perez, E.A., Castro, T.K., Chapiro, A., Vieira, M.B.

High Frequency Assessment from Multiresolution Analysis,
International Conference on Computational Science, Baton Rouge-USA, 2009
Castro, T.K., Perez, E. A. , Mota, V. F. , Chapiro, A. , Vieira, M. B. , Freire, W. P.

Patents

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

Virtual reality cinema-immersive movie watching for headmounted displays,
US Patent US20200134780 A1, 2019
Chapiro, A., Atluru, C., Chun, C.W., Haricharan, L., Rozzi, W., Ruggieri, S., Ninan, A.

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, A., Martin, M., Pont-Tuset, J., Chapiro, A., Guiu, M.

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

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

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

Four additional patents currently in review

Book Chapters

Discrete Wavelets on Edges,
InTech open publisher, 2011
Chapiro, A. , Knop, T., Mota, V., Perez, E., Bernardes, M., Freire W. P.

Posters

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

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

Towards Mobile HDR Video,
International Conference on Computational Photography, Pittsburg-USA, 2011
Castro, T.K., Chapiro, A., Cicconet, M., Velho, L.

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

Other

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

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