

# Dr George-Alex Koulieris

*Computer Graphics, Virtual Reality, Perception, Displays*

## Employment

- 2018-... **Assistant Professor, Durham University**, *Department of Computer Science*, UK.
- 2015-2018 **Post-doctoral Fellow, Inria Sophia-Antipolis**, *Team GraphDeco*, France, 28 months.  
Inria@Silicon Valley Grant & H2020 EMOTIVE project (727188)
- Feb.-July 2016 **Visiting Scholar, UC Berkeley**, *Inria@Silicon Valley Grant, French Institute for Research in Computer Science and Automation*, Sophia-Antipolis, France, Visiting Bankslab, Vision Science.  
"Improving 3D Stereo Displays based on Human Perception"  
Collaborators: Prof. Martin S. Banks, Dr. George Drettakis

## Education

- 2015 **PhD.**, *Department of Electronic & Computer Engineering, Technical University of Crete*, Greece.  
"Context-aware Gaze Prediction applied to Game Level Design, Level-of-Detail and Stereo Manipulation"  
Supervisor: Assoc. Prof. Katerina Mania, Collaborators: Dr. George Drettakis, Prof. Douglas Cunningham
- 2011 **MSc.**, *School of Computer Science, Athens University of Economics and Business*, Greece.  
Thesis: "Brain-MRI Volume Data Processing and Visualization"  
Supervisors: Assist. Prof. Georgios Papaioannou, Prof. Theoharis Theoharis
- 2009 **BSc (Hons)**, *Department of Informatics & Telecommunications, University of Athens*, Greece.  
Thesis: "Efficient Soft Shadow Mapping"  
Supervisors: Dr. George Drettakis, Prof. Theoharis Theoharis

## Peer-reviewed journal publications

- 2020 ○ Vera, J., Redondo, B., Perez-Castilla, A., **Koulieris, G. A.**, Jiménez, R., Garcia-Ramos, A. (2020). The Intraocular Pressure Response to Lower-body and Upper-body Isometric Exercises is affected by the Breathing Pattern. *European Journal of Sport Science*, 1-18.
- 2019 ○ Zhong, F., **Koulieris, G. A.**, Drettakis, G., Banks, M. S., Chambe, M., Durand, F., Mantiuk, R. (2019) DiCE: Dichoptic Contrast Enhancement for VR and Stereo Displays. *ACM Transactions on Graphics*, 38, 6, Article 211
- **Koulieris, G. A.**, Aksit, K., Stengel, M. Mantiuk, R. K., Mania, K., Richardt, C. (2019) Near-Eye Display and Tracking Technologies for Virtual and Augmented Reality. *Computer Graphics Forum (EG 2019 STAR)*
- Vera, J., Redondo, B., Molina, R., **Koulieris, G. A.**, Jiménez, R. (2019). Validation of an Objective Method for the Qualitative and Quantitative Assessment of Binocular Accommodative Facility. *Current Eye Research*.
- Vera, J., Rodríguez, R., García, D., Pérez, A., Redondo, B., Delgado, G., **Koulieris, G. A.**, García, A. (2019) Acute Intraocular Pressure Changes during Isometric Exercise and Recovery: the Influence of Exercise Type and Intensity, and Participant's Sex. *Journal of Sports Sciences*, Taylor & Francis
- Vera, J., Rodríguez, R., Redondo Cabrera, B., Torrejón, A., **Koulieris, G. A.**, De Moraes, C., García Ramos, A. (2018) Investigating the Immediate and Cumulative Effects of Isometric Squat Exercise for Different Weight Loads on Intraocular Pressure: A Pilot Study. *Sports Health*, SAGE Journals
- 2017 ○ **Koulieris, G. A.**, Bui, B., Banks, M. S., Drettakis, G. (2017). Accommodation and Comfort in Head Mounted Displays. *ACM Transactions on Graphics (ACM SIGGRAPH 2017)*, Los Angeles, California 30 July - 3 August
- 2014 ○ **Koulieris, G. A.**, Drettakis, G., Cunningham, D., Mania, K. (2014). C-LOD: Context-aware Material Level-Of-Detail applied to Mobile Graphics. *Computer Graphics Forum (EGSR) (Vol. 33, No. 4, pp. 41-49)*, Lyon, France
- **Koulieris, G. A.**, Drettakis, G., Cunningham, D., Mania, K. (2014). An Automated High Level Saliency Predictor for Smart Game Balancing. *ACM Transactions on Applied Perception (TAP)* 11, 4, Article 17 (September 2014), 21 pages.

## Peer-reviewed conference publications

- 2020 ○ Drakopoulos, P., **Koulieris, G. A.**, Mania, K. (2020, March). Front Camera Eye Tracking for Mobile VR. In 2020 IEEE Conference on Virtual Reality and 3D User Interfaces Abstracts and Workshops (VRW) (pp. 643-644). IEEE.
- 2019 ○ Zhong, F., **Koulieris, G.A.**, Drettakis, G., Durand, F., Banks, M.S., Chambe, M., Mantiuk, R. (2019) DiCE: Dichoptic Contrast Enhancement for Binocular Displays. Posters, ACM SIGGRAPH 2019, Los Angeles, USA
- 2018 ○ **Koulieris, G. A.**, Akşit K., Richardt C., Mantiuk R. (2018). Cutting-edge VR/AR Display Technologies (Gaze-, Accommodation-, Motion-aware and HDR-enabled). SIGGRAPH Asia 2018 Course, 4-7 December, Tokyo, Japan.  
○ **Koulieris, G. A.**, Akşit K., Richardt C., Mantiuk R., Mania K. (2018). Cutting-edge VR/AR Display Technologies (Gaze-, Accommodation-, Motion-aware and HDR-enabled). IEEE VR 2018, Full-day course, Reutlingen, Germany.
- 2017 ○ Patney, A., Kim, J., Robinson, P., **Koulieris, G. A.**, Wetzstein, G., Steinicke, F. (2017). Applications of Visual Perception to Virtual Reality Rendering. Half-day course at ACM SIGGRAPH 2017, LA, California, USA  
○ Banks, M. S., Johnson, P. V., Kim, J., **Koulieris G. A.**, Drettakis, G., Parnell, J., Love, G. D. (2017). Focus-tunable and Fixed Lenses and Stereoscopic 3D Displays. Emerging Liquid Crystal Technologies XII, SPIE 2017, San Francisco, USA
- 2016 ○ **Koulieris, G. A.**, Drettakis, G., Cunningham, D., Mania, K. (2016). Gaze Prediction using Machine Learning for Dynamic Stereo Manipulation in Games. IEEE VR 2016, pp. 113-120, Greenville, South Carolina 19-23 March
- 2015 ○ Sidorakis, N., **Koulieris, G. A.**, Mania, K., "Binocular eye-tracking for the control of a 3D immersive multimedia user interface," IEEE 1st Workshop on Everyday Virtual Reality (WEVR), pp.15-18, 23-25 March 2015, Arles, France
- 2014 ○ McNamara, A., Mania, K., **Koulieris, G. A.**, Itti, L. (2014). Attention-Aware Rendering, Mobile Graphics and Games. Half-day course ACM SIGGRAPH 2014, Vancouver, Canada  
○ **Koulieris, G. A.**, Drettakis, G., Cunningham, D., Mania, K. (2014). High Level Saliency Prediction for Smart Game Balancing. Talk, ACM SIGGRAPH 2014, Vancouver, Canada  
○ **Koulieris, G. A.**, Drettakis, G., Cunningham, D., Sidorakis, N., Mania, K. (2014). Context-aware Material Selective Rendering for Mobile Graphics. Poster [**won 3rd place at the ACM Student Research Competition**], ACM SIGGRAPH 2014, Vancouver, Canada
- 2012 ○ Paraskeva, C., **Koulieris, G. A.**, Coxon, M., Mania, K. (2012). Gender Differences in Spatial Awareness in Immersive Virtual Environments: A Preliminary Investigation. 11th ACM Siggraph International Conference on Virtual Reality Continuum and its Applications on Industry, December 2012, Singapore.

## Grants and scholarships

- 2019-2020 **Durham CS: two** departmental PhD scholarships awarded
- 2015-2017 **Inria@Silicon Valley**, Sophia-Antipolis/UC Berkeley (16 months)
- 2012-2014 **Heracleitus II**, EU Social Fund & Greek National Strategic Reference Framework (36 months)
- 2008-2009 **Inria** Sophia-Antipolis Unit, France, REVES Team Intern (6 months)

## Patents

- 2018 **Pseudo Light-field Display Apparatus**, WO2017192887A3.

## International program committee memberships

- 2019-... CGVC, Computer Graphics & Visual Computing conference

## Editorial board memberships

- 2018-... The Visual Computer Journal, Associate Editor

## Reviewer

2013-... ACM SIGGRAPH (& Asia) Technical Papers, ACM SIGGRAPH General Submissions, ACM Special Interest Group on Computer-Human Interaction (SIGCHI), ACM Symposium on Applied Perception, ACM Transactions on Applied Perception, ACM Computational Aesthetics, Computer Graphics Forum, Eurographics, Frontiers Neuroscience, IEEE Transactions on Visualization and Computer Graphics (TVCG), IEEE VR, ISMAR, Journal of Vision, MIT Presence: Teleoperators and Virtual Environments, VS Games

## Teaching

Adv. CG **Lecturer**, 4th year module 2019-20 (Durham University)  
Visualisation **Lecturer**, 4th year module 2019-20 (Durham University)  
VR & AR **Lecturer**, 3rd & 4th year module 2018-19 (Durham University)  
CG **Teaching Assistant**, Laboratory Course 2009-2010 (AUEB), 2012-2015 (TUC)  
VR **Teaching Assistant**, Laboratory Course 2012-2015 (TUC)  
SIGGRAPH Cutting-Edge VR/AR Display Technologies. *Course SIGGRAPH Asia '18, Tokyo*  
SIGGRAPH Applications of Visual Perception to Virtual Reality Rendering. *Course SIGGRAPH '17, LA*  
SIGGRAPH Attention-Aware Rendering, Mobile Graphics and Games. *Course SIGGRAPH '14, Vancouver*  
IEEE VR Cutting-Edge VR/AR Display Technologies. *Full-day course IEEE VR '18, Reutlingen, Germany*

## Supervision

2019-... PhD student working on medical ultrasound training in VR  
2018-... ERDF IIP-funded PhD student working on the application of VR technologies for marketing research  
2018-... Undergraduate project supervision, 3rd & 4th year students  
2018-... MSc projects supervision

## Computer skills

Coding C, C++, C#, Java, OpenGL/WebGL/GLSL, D3D/HLSL, Matlab, Python, x86 ASM, HTML, JS, SQL  
Platforms Unity 3D, R, LaTeX, Arduino/Electronics, Android Programming

## Awards

2014 **3rd place** at the ACM Graduate Student Research Competition, SIGGRAPH 2014  
2010 **Top-3 MSc semester course performance**, School of Computer Science, AUEB  
2004 **Great Moment for Education Award**, Award for the grades achieved at the university admission exams, Eurobank EFG

## Invited talks

2019 **Durham University, UK**, Accommodation and Comfort in Head-mounted Displays  
2017 **University of Cambridge, UK**, Accommodation and Comfort in Head-mounted Displays  
**Inria Rennes, France**, Applied Visual Perception for Near-eye Displays

## Research visits

2017 **Three research visits to Cambridge Uni Computer Science Dept. Rainbow group**  
2015 **Two research visits to UC Berkeley's Visual Space Perception Lab (Bankslab)**

## Vocational training

2018-... Postgraduate Certificate in Learning & Teaching in Higher Education  
2018 Unconscious Bias, Durham University, UK  
Preparing to Supervise, Durham University, UK  
Respecting Others: Challenging Negative Behaviours, Durham University, UK  
2016 Biomedical responsible conduct of research, UC Berkeley, USA

## Languages

English C2 Proficient

German B2 Upper Intermediate  
Greek Native speaker

## PhD examinations

- 2019 **External Examiner for Bea Redondo**, *University of Granada, Spain.*
- 2019 **Internal Examiner for Abi Finch**, *Durham University, UK.*
- 2019 **Internal Examiner for Samet Akcay**, *Durham University, UK.*

## Other professional experience/memberships

- 2019-... **Equality, Diversity & Inclusion Committee (EDIC) co-director**, *Durham University, UK.*
- 2019-... **Centre for Vision and Visual Cognition (CVVC) co-director**, *Durham University, UK.*
- 2013-15 **Co-authoring of EU research proposals**, *Technical University of Crete, Chania, Greece.*
- 2013-15 **Co-organizing of *Open Science Days***, *Technical University of Crete, Chania, Greece.*
- 2011 **Systems Manager**, *Hellenic Army, Athens, Greece.*
- 7/2010 **Summer School in New Technologies**, *NCSR Demokritos, Athens, Greece.*
- 10/2008- **REVES Team Intern**, *Inria, Sophia-Antipolis Unit, France.*
- 3/2009 Working on efficient Soft Shadow Mapping algorithms

## Workshops

- Summer School on Human Computer Confluence**, *July 2012, Milan, Italy*
- Modern Software Applications**, *Apple Computers, DIT UOA, Greece*
- JAVA Developer Day**, *Sun Microsystems, AIT Athens, Greece*
- Linux Seminar**, *Divani Caravel, Athens, Greece*
- Green ICT Standards**, *Divani Caravel, Athens, Greece*
- InterMedia Café for the future of multi-device interactivity**, *Intracom, Athens, Greece*

## Students (co-)supervised

- Durham James Patrick Elliman  
Mariam Sarham  
Chris Smith
- Inria Mathieu Chambe
- TUC Andreas Polychronakis  
Panagiotis Drakopoulos  
Christos Paraskeva  
Nikolaos Sidorakis  
Fotis Pegios  
Iordanis Fytanoglou  
Panagiotis Kotsarinis