Jaroslav Křivánek (doc. Ing., Ph.D.)

Faculty of Mathematics and Physics
Charles University, Prague
Malostranské náměstí 25
118 00 Praha 1, Czech Republic

phone: +420 776 798 012
e-mail: jaroslav.krivanek@mff.cuni.cz
http://cgg.mff.cuni.cz/~jaroslav/

Bio sketch: Jaroslav Křivánek is an associate professor of computer science at Charles University, Prague, and a co-founder and the Director of Research of Chaos Czech a.s. Previously, he was affiliated with Cornell University, Czech Technical University, Prague, and University of Central Florida. Jaroslav received his Ph.D. from INRIA Rennes, France and CTU in Prague (joint degree). His primary research interest is in light transport simulation methods and their applications in realistic rendering, appearance fabrication and 3D printing. He has co-authored more than research 70 research papers and his technologies were adopted, among other, by PIXAR, Disney, Weta Digital, Allegorithmic, or Chaos Group. Jaroslav was selected for the New Europe 100 "list of outstanding challengers from Central and Eastern Europe".

CURRENT POSITION	05/2013 – present	**Charles University Prague, Faculty of Mathematics and Physics** Associate professor (docent).
	07/2014 – present	**Chaos Czech a.s. (previously Render Legion a.s.)** Co-founder, Member of the Board, Director of Research.
WORK EXPERIENCE	08/2011 – 04/2013	**Charles University Prague, Faculty of Mathematics and Physics** Assistant professor.
	03/2013 – 06/2013 (4 months)	**Weta Digital, New Zealand** Visiting professor.
	07/2012 – 09/2012 (2 months)	**Disney Research Zurich, Switzerland** Research consultant.
	06/2012 (1 month)	**University of Rennes 1 (IRISA – INRIA Rennes)** Visiting professor.
	06/2011 (1 month)	**University of Rennes 1 (IRISA – INRIA Rennes)** Visiting professor.
	08/2010 – 07/2011	**Charles University Prague, Faculty of Mathematics and Physics** Marie Curie research fellow.
	08/2008 – 07/2010	**Cornell University, Department of Computer Science** Marie Curie research fellow.
	11/2007–12/2007 (2 months)	**Sony Pictures Imageworks** Consultant.
	2006 – 07/ 2008	**Czech Technical University in Prague** Assistant professor / researcher.
	2003 – 2005 (13 months)	**University of Central Florida** Visiting researcher.
	1999 – 2000 (14 months)	**Seznam.cz** Software developer.
EDUCATION	2001 – 2005	**INRIA Rennes, France – Czech Technical University in Prague, Czech Rep.** Ph.D. in Computer Science, Computer Graphics - Image Synthesis Thesis title: "Radiance Caching for Global Illumination Computation on Glossy Surfaces"
	1995 – 2001	**Czech Technical University in Prague, Faculty of Electrical Engineering** Master in Computer Science and Engineering, Computer Graphics (Czech title: Ing.) Thesis title: "Modern Algorithms for Image Synthesis."
AWARDS	2014	**#NE100 challenger** "List of outstanding challengers who are leading world-class innovation from Central and Eastern Europe," awarded by Res Publica together with the Visegrad Fund, Google and Financial Times.
FUNDING	2019 – 2021	**Czech Science Foundation, GAČR** (Principal Investigator, 8375k CZK ≈ 326k EUR) High-fidelity appearance fabrication, proj. no. 19-07626S.
	2016 – 2018	**Czech Science Foundation, GAČR** (Principal Investigator, 7275k CZK ≈ 285k EUR)

Adaptive sampling and MCMC methods in light transport simulation, proj. no. 16-18964S.

2015 – 2018 **European Commission – H2020 ITN** (Scientist-in-charge for CUNI, ≈ 465k EUR)
DISTRO – Distributed Object Design, proj. no. 642841.

2013 – 2015 **Czech Science Foundation, GAČR** (Principal Investigator, 6293k CZK ≈ 245k EUR)
Robust and Efficient Light Transport Simulation…, proj. no. 13-26189S.

2008 – 2011 **European Commission – FP7 Marie Curie Fellowship** (PI, ≈ 203k EUR)
CGI-for-Film: Controllable Global Illumination for Film Production, proj. no. 221716.

PUBLICATIONS

ResearchID/publons: https://publons.com/researcher/N-1043-2019/; Orcid: https://orcid.org/0000-0002-8780-1702
WOS: entries 33, citations 612, h-index 15; *Google scholar*: entries 95, citations 2094, h-index 27
20 papers in ACM Trans. Graph., the premier journal in the field; one US patent; one monograph; work covered in popular media (fxguide, etc.).

TEACHING

Charles University: Introduction to Computer Graphics (2018), Computer Graphics for Game Development (2016 – 2019); Predictive Image Synthesis Technologies (2014 – 2019); Computer Graphics III (2010–2019); Selected Topics in Global Illumination (2011 – 2012); Special Seminar in Computer Graphics (2010 – 2018); Seminar in Scientific Soft Skills (Spring 2012, 2014, 2016, 2019).
Czech Technical University: Algorithms for Computer Graphics (2006 – 2007, TA); Realistic Image Synthesis (Spring 2007); Multimedia and Virtual Reality (2005, TA); Introduction to Programming (2001 – 2002, TA).

STUDENTS

Ph.D.

Tomáš Iser, *Controlling and Extending Appearance of 3D Printed Objects*, 10/2019 – ongoing.
Tobias Rittig, *High-fidelity appearance fabrication through 3D printing*, 10/2019 – ongoing.
Thomas Nindel, *Predictive Rendering in Wood Manufacturing*, 10/2018 – ongoing.
Martin Mirbauer, *Artificial intelligence in content creation for 3D computer graphics*, 10/2018 – ongoing.
Asen Atanasov, *Material appearance modeling for realistic rendering*, 10/2017 – ongoing.
Petr Vévoda, *Advanced Monte Carlo methods in Image Synthesis*, 10/2015 – ongoing.
Ivo Kondapaneni, *Efficient Rendering of Complex Environments*, 10/2015 – ongoing.
Oskár Elek, *Realistic rendering for distributed 3D fabrication processes*, 06/2015 – ongoing.
Martin Kahoun, *Procedural generation of computer graphics content*, 10/2013 – ongoing.
Ondřej Karlík, *Efficient Image Synthesis Algorithms*, 10/2011 – ongoing (currently interrupted)
Jan Beneš, *Procedural modeling and realism in computer graphics*, 10/2011 – 10/2019.
(submitted dissertation thesis, now researcher at Represent)
Martin Šik, *Global exploration in MCMC methods for light transport simulation*, 10/2012 – 1/2019 (graduated, now senior researcher at Render Legion)
Jiří Vorba, *Adjoint-Driven Importance Sampling in Light Transport Simulation*, 10/2011 – 06/2017 (gradueated, now with Weta Digital)
Václav Gassenbauer, *Exploiting Coherence for Efficient Global Illumination Computation*, 03/2007 – 12/2012 (gradueated, now researcher at Valeo cz)

Master's - Charles University

Štěpán Hojdar, *Using neural networks to generate realistic skies*, defended 09/2019.
Miroslav Krabec, *3D object classification using neural networks*, defended 05/2019.
Martin Mirbauer, *Evaluation of Dynamic Range Reconstruction Approaches and a Mobile Application for HDR Photo Capture*, 09/2017 – 09/2018. (**Dean's award.**)
Jakub Šťasta, *Image Denoising Using Weighted Local Regression*, 05/2015 – 07/2017
Michal Wirth, *Advanced HDR image viewer*, 05/2015 – 01/2017.
Martin Bulant, *GPU implemenation of the irradiance a radiance caching algorithms*, 03/2012 – 12/2014.
Petr Vévoda, *Robust light transport simulation in participating media*, 10/2013 – 12/2014
(**3rd place award – ACM Student project of the Year 2015)**
Čestmír Houška, *Efficient visibility calculation for light transport simulation in participating media*, 10/2012 – 08/2013.
Matej Marko, *Sound simulation of granular materials*, 11/2011 – 08/2013.
Dalibor Frívaldský, *Fast implementation of procedural texturing*, 11/2010 – 08/2013.
Tomáš Svoboda, *Realistic hair rendering in Autodesk Maya*, MFF UK, 05/2012 – 09/2012.
Martin Šik, *Hair interpolation*, 11/2010 – 09/2012.
Martin Růžička, *Design and evaluation of a user inteface for cinematic lighting*, 09/2010 – 02/2012.

Jiří Václavík, *CSG modeling for polygonal objects*, 11/2010 – 02/2012.
Jiří Vorba, *Optimal strategy for connecting light paths in bidirectional methods*, 09/2010 – 06/2011.
(**2nd place award – ACM Student project of the Year 2011, Best paper – CESCG 2011**)

Master's - Czech Technical University

Petr Liška, *Image-based shape modification*, 09/2009 – 04/2010.
Martin Dušek, *Efficient rendering of hair and fur*, 09/2007 – 04/2008.
Jiří Štempin, *Interactive relighting of cinematic scenes*, 09/2007 – 04/2008.
Petr Minařík, *A User-Friendly Editor for 3D Worlds*, 09/2006 – 06/2007.
Jiří Formánek, *Non-linear Representation of Light Transport*, 09/2006 – 06/2007.
Václav Gassenbauer, *Environment Mapping on Glossy Objects Using Wavelets*, 02/2006 – 02/2007.
Jan Ondřej, *Analytical Model for Light Scattering in Participating Media*, 02/2006 – 02/2007.

Bachelor theses - Charles University

Martin Studna, *Procedural generation of pencil drawings*, defended 09/2019.
Bohuš Brečka, *Efficient rendering of fine structures on object surfaces*, defended 05/2018.
Vojtěch Tázlar, *Procedural tree generation*, defended 07/2018.
Jan Špaček, *Integration of the Corona renderer into the ArchiCAD software*, defended 06/2018.
Štěpán Hojdar, *Corona Scatter: Procedural placement of 3D objects*, 05/2016 – 06/2017
Tomáš Šváb, *Real-time global illumination computation*, 11/2012 – 06/2014.
Jan Čermák, *Procedural generation of human skin structure*, 11/2012 – 06/2014.
Tomáš Skřivan, *3D Texture deformation according to a polygonal model*, 12/2011 – 06/2014.
Ivan Kuckir, *Data structures for rendering non-polygonal geometry*, 11/2012 – 07/2013.

Bachelor theses - Czech Technical University

Peter Krištof, *Water Erosion using Smoothed Particle Hydrodynamics*, 09/2007 – 06/2008.
(**results published in Computer Graphics Forum, vol. 28, no. 2., pp. 219–228, 2009**)
Hana Trusková, *Digital reconstrucion of Celtic Oppida*, 09/2007 – 04/2008.
Radek Bien, *Terrain reconstruction from contour maps*, 09/2007 – 04/2008.
Jan Štěpánosvký, *Semi-automatic extraction of contour-lines from scanned maps*, 09/2007 – 06/2008.
Lubomír Rezek, *3D Data Conversion*, 03/2007 – 04/2008.
Ondrej Klučka, *Level-of-detail in OpenGL*, 03/2006 – 04/2008.
Michal Černohorský, *Rendering of Topographic Vector Maps for the GPS Navigation*, 03/2007 – 06/2007.

PROF. ACTIVITIES

Editorial Board

ACM Transactions on Graphics (2019 – …)
Computer Graphics Forum (2014–2017)
Computer Science Review (2013–2015)

Program committee

2020: EUROGRAPHICS full papers
2019: ACM SIGGRAPH Asia technical papers; EUROGRAPHICS full papers, GRAPP Area Chair (Rendering), Pacific Graphics.
2018: EUROGRAPHICS State of the art reports
2016: EGSR, 4th CIE Expert Symposium on Colour and Visual Appearance, EUROGRAPHICS tutorials, EUROGRAPHICS State of the art reports
2015: ACM SIGGRAH technical papers, EUROGRAPHICS technical papers, EUROGRAPHICS Short papers, CAD/Graphics, GRAPP.
2014: SCCG, CAD/Graphics, GRAPP, WSCG.
2013: EGSR, I3D, SCCG, WSCG, CAD/Graphics.
2012: EGSR, I3D, ACM SIGGRAPH Asia Technical Briefs, SCCG, WSCG.
2011: EGSR, SCCG.
2010: Pacific Graphics.
2009: EGSR, ACM SIGGRAPH Asia Sketches, Eurographics posters.
2008: EGSR.
2007: EGSR.
(EGSR = Eurographics Symposium on Rendering; I3D = ACM SIGGRAPH Symposium on Interactive 3D Graphics and Games; SCCG = Spring Conference on Computer Graphics, WSCG = International Conference in Central Europe on Computer Graphics, Visualization and Computer Vision; CAD/Graphics = International Conference on Computer-Aided Design and Computer Graphics; GRAPP = International Conference on Computer Graphics Theory and Applications.)

	Organizing committee Eurographics 2007; Eurographics Symposium on Rendering 2011; HiVisComp 2014 - 2016. **Reviewing for journals** ACM Transactions on Graphics, IEEE Transactions on Pattern Analysis and Machine Intelligence, IEEE Transactions on Visualization and Computer Graphics, Computer Graphics Forum, SPIE Journal of Electronic Imaging, The Visual Computer, Computers & Graphics, Computer Animation and Virtual Worlds. **Habilitation and Ph.D. committee membership** Habilitation committee member (3x), Ph.D. defense committee (vice-)chair (6x) or member (10x).
INVITED TALKS	High Performance Computing in Science and Engineering (HPCSE 2019, keynote), International Conference on Graphics and Interaction (ICGI, 11/2018, keynote); Journées Françaises d'Informatique Graphique (J-FIG, 11/2018, keynote), Total Chaos (05/2018); Prague Computer Science Seminar (10/2017); PIXEL Vienna (09/2017, keynote); CESCG (04/2016, keynote); TEDx Prague (06/2014); Academy of Sciences of the Czech Republic (01/2013); IRISA Rennes (06/2011, 06/2012); Max-Planck-Institut Informatik (03/2011); Karlsruhe Institute of Technology (03/2011); Czech Technical University (11/2010); INRIA Rhones-Alpes (03/2010). Organized 8 and presented in 9 peer-reviewed courses at the ACM SIGGRAPH conference.
LANGUAGES	Czech (native), English (fluent), French (advanced), German, Russian (basics).

Last updated 28. 10. 2019