

Yuki Koyama, Ph.D.

PERSONAL DATA

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RESEARCH INTERESTS

His research interests lie in the cross-disciplinary field between **Computer Graphics** and **Human-Computer Interaction**, where he has been mainly working on *computational design*, i.e., using computational techniques (e.g., numerical optimization, machine learning, etc.) for facilitating designers' activities or solving design problems directly. The target domain includes 2D/3D visual design, personal fabrication, user interface design, and more. Recently, he has been particularly investigating the *human-in-the-loop optimization* approach in this context. In parallel, he is also developing techniques for expressive computer animation.

EDUCATION

APR 2014–MAR 2017	Ph.D. in INFORMATION SCIENCE AND TECHNOLOGY (2017/3/23) Graduate School of Information Science and Technology The University of Tokyo , Japan Advisor: Prof. Takeo IGARASHI
APR 2012–MAR 2014	Master of INFORMATION SCIENCE AND TECHNOLOGY (2014/3/24) Graduate School of Information Science and Technology The University of Tokyo , Japan Advisor: Prof. Takeo IGARASHI
APR 2008–MAR 2012	Bachelor of SCIENCE (2012/3/23) School of Science The University of Tokyo , Japan Advisor: Prof. Takeo IGARASHI

PROFESSIONAL/WORK EXPERIENCE

APR 2022–present	THE UNIVERSITY OF TOKYO Part-Time Lecturer Teaching <i>Computer Graphics</i> .
MAY 2021–present	GRAPHINICA, INC. Technical Advisor Working on R&D for 3D computer animation production.
APR 2017–present	NATIONAL INSTITUTE OF ADVANCED INDUSTRIAL SCIENCE AND TECHNOLOGY (AIST) Researcher (April 2017–Sep. 2022), Senior Researcher (Oct. 2022–present) Leading academic research projects and industrial collaborations.
APR 2014–MAR 2017	JAPAN SOCIETY FOR THE PROMOTION OF SCIENCE (JSPS) Research Fellow (DC1) Funded for three years by JSPS Research Fellowships for Young Scientists (DC1).

MAY 2014–AUG 2014	DISNEY RESEARCH, Boston Lab Associate (Internship) Participated an internship program and conducted a research project about computational design of 3D-printable objects.
JUL 2012–FEB 2013	IPA MITOH PROGRAM Project Leader Funded for half a year as a project leader of an exploratory software development project and developed a physics engine for real-time computer animations.
APR 2011–APR 2012	QONCEPT, INC., Tokyo Software Engineer Developed AR Apps for iOS and Android OS.

PUBLICATIONS (PEER-REVIEWED CONFERENCE & JOURNAL PAPERS)

- [1] Daichi Horita, Jialong Yang, Dong Chen, **Yuki Koyama**, Kiyoharu Aizawa, and Nicu Sebe. 2023 A Structure-Guided Diffusion Model for Large-Hole Image Completion. In *Proceedings of the 34th British Machine Vision Conference (BMVC '23)*, pp.XX–XX. (Accepted)
- [2] **Yuki Koyama** and Masataka Goto. 2022. BO as Assistant: Using Bayesian Optimization for Asynchronously Generating Design Suggestions. In *Proceedings of the 35th Annual ACM Symposium on User Interface Software and Technology (UIST '22)*, pp.77:1–77:14.
DOI : <https://doi.org/10.1145/3526113.3545664>
- [3] Kenta Yamamoto, **Yuki Koyama**, and Yoichi Ochiai. 2022. Photographic Lighting Design with Photographer-in-the-Loop Bayesian Optimization. In *Proceedings of the 35th Annual ACM Symposium on User Interface Software and Technology (UIST '22)*, pp.92:1–92:11.
DOI : <https://doi.org/10.1145/3526113.3545690>
- [4] Hiromu Yakura, **Yuki Koyama**, and Masataka Goto. 2021. Tool- and Domain-Agnostic Parameterization of Style Transfer Effects Leveraging Pretrained Perceptual Metrics. In *Proceedings of the 30th International Joint Conference on Artificial Intelligence (IJCAI '21)*. 1208–1216.
DOI : <https://doi.org/10.24963/ijcai.2021/167>
- [5] Takayuki Nakatsuka, Kento Watanabe, **Yuki Koyama**, Masahiro Hamasaki, Masataka Goto, and Shigeo Morishima. 2021. Vocal-Accompaniment Compatibility Estimation Using Self-Supervised and Joint-Embedding Techniques. *IEEE Access* 9 (2021), 101994–102003.
DOI : <https://doi.org/10.1109/ACCESS.2021.3096819>
- [6] Takayuki Nakatsuka, Kazuyoshi Yoshii, **Yuki Koyama**, Satoru Fukayama, Masataka Goto, and Shigeo Morishima. 2021. MirrorNet: A Deep Reflective Approach to 2D Pose Estimation for Single-Person Images. *Journal of Information Processing* 29 (2021), 406–423.
DOI : <https://doi.org/10.2197/ipsjjip.29.406>
- [7] Masa Ogata and **Yuki Koyama**. 2021. A Computational Approach to Magnetic Force Feedback Design. In *Proceedings of the 2021 CHI Conference on Human Factors in Computing Systems (CHI '21)*. 284:1–284:12.
DOI : <https://doi.org/10.1145/3411764.3445631>
- [8] Yijun Zhou, **Yuki Koyama**, Masataka Goto, and Takeo Igarashi. 2021. Interactive Exploration-Exploitation Balancing for Generative Melody Composition. In *Proceedings of the 26th International Conference on Intelligent User Interfaces (IUI '21)*. 43–47.
DOI : <https://doi.org/10.1145/3397481.3450663>
- [9] Yijun Zhou, **Yuki Koyama**, Masataka Goto, and Takeo Igarashi. 2020. Generative Melody Composition with Human-in-the-Loop Bayesian Optimization. In *Proceedings of the 2020 Joint Conference on AI Music Creativity (CSMC-MuMe 2020)*. 21:1–21:10.
https://boblsturm.github.io/aimusic2020/papers/CSMC__MuMe_2020_paper_21.pdf

- [10] Ryo Shimamura, Qi Feng, **Yuki Koyama**, Takayuki Nakatsuka, Satoru Fukayama, Masahiro Hamasaki, Masataka Goto, and Shigeo Morishima. 2020. Audio-Visual Object Removal in 360-Degree Videos. *Visual Comput.* 36, 10–12 (2020), 2117–2128.
DOI:<http://doi.org/10.1007/s00371-020-01918-1>
- [11] **Yuki Koyama**, Issei Sato, and Masataka Goto. 2020. Sequential Gallery for Interactive Visual Design Optimization. *ACM Trans. Graph.* 39, 4 (2020), 88:1–88:12.
DOI:<http://doi.org/10.1145/3386569.3392444>
- [12] Chia-Hsing Chiu, **Yuki Koyama**, Yu-Chi Lai, Takeo Igarashi, and Yonghao Yue. 2020. Human-in-the-Loop Differential Subspace Search in High-Dimensional Latent Space. *ACM Trans. Graph.* 39, 4 (2020), 85:1–85:15.
DOI:<http://doi.org/10.1145/3386569.3392409>
- [13] Tomoyasu Nakano, **Yuki Koyama**, Masahiro Hamasaki, and Masataka Goto. 2020. Interactive Deep Singing-Voice Separation Based on Human-in-the-Loop Adaptation. In *Proceedings of the 25th International Conference on Intelligent User Interfaces (IUI '20)*. 78–82.
DOI:<http://doi.org/10.1145/3377325.3377539>
- [14] **Yuki Koyama** and Masataka Goto. 2019. Precomputed Optimal One-Hop Motion Transition for Responsive Character Animation. *Visual Comput.* 35, 6–8 (2019), 1131–1142.
DOI:<http://doi.org/10.1007/s00371-019-01693-8>
- [15] **Yuki Koyama** and Masataka Goto. 2018. Decomposing Images into Layers with Advanced Color Blending. *Comput. Graph. Forum* 37, 7 (2018), 397–407.
DOI:<http://doi.org/10.1111/cgf.13577>
- [16] **Yuki Koyama** and Masataka Goto. 2018. OptiMo: Optimization-Guided Motion Editing for Keyframe Character Animation. In *Proceedings of 2018 CHI Conference on Human Factors in Computing Systems (CHI '18)*. 161:1–161:12.
DOI:<http://doi.org/10.1145/3173574.3173735>
- [17] Eisuke Fujinawa, Shigeo Yoshida, **Yuki Koyama**, Takuji Narumi, Tomohiro Tanikawa, and Michitaka Hirose. 2017. Computational Design of Hand-Held VR Controllers Using Haptic Shape Illusion. In *Proceedings of the 23rd ACM Symposium on Virtual Reality Software and Technology (VRST '17)*. 28:1–28:10.
DOI:<http://doi.org/10.1145/3139131.3139160>
- [18] **Yuki Koyama**, Issei Sato, Daisuke Sakamoto, and Takeo Igarashi. 2017. Sequential Line Search for Efficient Visual Design Optimization by Crowds. *ACM Trans. Graph.* 36, 4 (2017), 48:1–48:11.
DOI:<http://doi.org/10.1145/3072959.3073598>
- [19] Morihiro Nakamura, **Yuki Koyama**, Daisuke Sakamoto, and Takeo Igarashi. 2016. An Interactive Design System of Free-Formed Bamboo-Copters. *Comput. Graph. Forum* 35, 7 (2016), 323–332.
DOI:<http://doi.org/10.1111/cgf.13029>
- [20] Lasse Farnung Laursen, **Yuki Koyama**, Hsiang-Ting Chen, Elena Garces, Diego Gutierrez, Richard Harper, and Takeo Igarashi. 2016. Icon Set Selection via Human Computation. In *Pacific Graphics 2016 - Short Papers*. 1–6.
DOI:<http://doi.org/10.2312/pg.20161326>
- [21] Kazutaka Nakashima, **Yuki Koyama**, Takeo Igarashi, Takashi Ijiri, Shin Inada, and Kazuo Nakazawa. 2016. Interactive Deformation of Structurally Complex Heart Models Constructed from Medical Images. In *Eurographics 2016 - Short Papers*. 49–52.
DOI:<http://doi.org/10.2312/egsh.20161012>
- [22] **Yuki Koyama**, Daisuke Sakamoto, and Takeo Igarashi. 2016. SelPh: Progressive Learning and Support of Manual Photo Color Enhancement. In *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems (CHI '16)*. 2520–2532.
DOI:<http://doi.org/10.1145/2858036.2858111>

- [23] **Yuki Koyama**, Shinjiro Sueda, Emma Steinhardt, Takeo Igarashi, Ariel Shamir, and Wojciech Matusik. 2015. AutoConnect: Computational Design of 3D-Printable Connectors. *ACM Trans. Graph.* 34, 6 (2015), 231:1–231:11.
DOI:<http://doi.org/10.1145/2816795.2818060>
- [24] **Yuki Koyama**, Daisuke Sakamoto, and Takeo Igarashi. 2014. Crowd-Powered Parameter Analysis for Visual Design Exploration. In *Proceedings of the 27th Annual ACM Symposium on User Interface Software and Technology (UIST '14)*. 65–74.
DOI:<http://doi.org/10.1145/2642918.2647386>
- [25] Nobuyuki Umetani, **Yuki Koyama**, Ryan Schmidt, and Takeo Igarashi. 2014. Pteromys: Interactive Design and Optimization of Free-formed Free-flight Model Airplanes. *ACM Trans. Graph.* 33, 4 (2014), 65:1–65:10.
DOI:<http://doi.org/10.1145/2601097.2601129>
- [26] **Yuki Koyama** and Takeo Igarashi. 2013. View-Dependent Control of Elastic Rod Simulation for 3D Character Animation. In *Proceedings of the 12th ACM SIGGRAPH/Eurographics Symposium on Computer Animation (SCA '13)*. 73–78.
DOI:<http://doi.org/10.1145/2485895.2485898>
- [27] **Yuki Koyama**, Kenshi Takayama, Nobuyuki Umetani, and Takeo Igarashi. 2012. Real-Time Example-Based Elastic Deformation. In *Proceedings of the 11th ACM SIGGRAPH/Eurographics Symposium on Computer Animation (SCA '12)*. 19–24.
DOI:<http://doi.org/10.2312/SCA/SCA12/019-024>

BOOK CHAPTERS

- [1] **Yuki Koyama**, Toby Chong, and Takeo Igarashi. 2022. Preferential Bayesian Optimisation for Visual Design. In *Bayesian Methods for Interaction and Design* (Eds. John H. Williamson, Antti Oulasvirta, Per Ola Kristensson, and Nikola Banovic), Cambridge University Press, 239–258.
DOI:<http://doi.org/10.1017/9781108874830.012>
- [2] **Yuki Koyama** and Takeo Igarashi. 2018. Computational Design with Crowds. In *Computational Interaction* (Eds. Antti Oulasvirta, Per Ola Kristensson, Xiaojun Bi, and Andrew Howes), Oxford University Press, 153–184.
DOI:<http://doi.org/10.1093/oso/9780198799603.003.0007>

AWARDS (SELECTED)

MAY 2022	Funai Information Technology Award for Young Researchers Funai Foundation for Information Technology
MAR 2022	AIST Best Paper Award National Institute of Advanced Industrial Science and Technology (AIST)
SEP 2021	Young Researcher Award Asian Association for Computer Graphics and Interactive Technology (Asiagraphics)
MAR 2017	Dean's Award Graduate School of Information Science and Technology, The University of Tokyo
MAR 2017	JSPS Ikushi Prize Japan Society for the Promotion of Science
OCT 2015	Microsoft Research Asia Fellowship Nomination Award Microsoft Research Asia

MAR 2014	IPSJ Yamashita SIG Research Award Information Processing Society of Japan (IPSJ)
OCT 2013	Innovative Technologies 2013 Ministry of Economy, Trade and Industry (Japan)
MAR 2012	Dean's Award School of Science, The University of Tokyo

ACADEMIC SERVICES

TEACHING:

- Computer Graphics (The University of Tokyo) (2022 summer, 2023 summer)

COMMITTEE MEMBER:

- SIGGRAPH Asia Technical Papers COI Coordinator (2022)
- CHI Assistant to Technical Program Chairs (2021)
- CHI Associate Chair (2020, 2022, 2023)
- Eurographics International Program Committee (2021, 2022)
- Pacific Graphics International Program Committee (2022, 2023)
- CGI International Program Committee (2019)
- IUI (Regular) Program Committee (2018, 2019)

REVIEWER:

- ACM Transactions on Graphics (2017, 2020)
- IEEE Transactions on Visualization and Computer Graphics (2021)
- Computer Graphics Forum (2022)
- SIGGRAPH (2015, 2020, 2021, 2022, 2023)
- SIGGRAPH Asia (2016, 2017, 2022, 2023)
- UIST (2016, 2017, 2018, 2019, 2020, 2022) (Received 2 *Special Recognitions for Outstanding Reviews*)
- CHI (2018, 2019, 2020, 2022, 2023, 2024) (Received 6 *Special Recognitions for Outstanding Reviews*)
- Eurographics (2017, 2018, 2020, 2021, 2022)
- Pacific Graphics (2013, 2016, 2022, 2023)
- Computers & Graphics (2023)
- ACM Transactions on Computer-Human Interaction (2023)
- International Journal of Human-Computer Interaction (2022, 2023)
- CGI (2019)
- ISS (2020)
- IUI (2018, 2019)
- VRST (2018)
- SCF (2020)
- IROS (2021)

COMPUTER SKILLS

LANGUAGES: C++, Python, C#, Javascript, GLSL, *etc.*

CREATIVE: Blender, After Effects, Unity, Photoshop, Illustrator, Houdini, Unreal Engine, *etc.*

Updated: November 6, 2023