Ondřej Texler

Personal Data

Affiliation: Samsung Research America
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Place of stay: San Jose, California, USA

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Research Summary

My entire research career has been revolving around generating realistically looking content given certain conditions. During my PhD I focused on research into style transfer – generating realistically looking paintings and animated movies. These days, at Samsung Research America, I do research into computer vision techniques to generate virtual humans with a particular emphasis on photorealism.

Education

Doctoral degree study (PhD) **2018 – 2021**
Computer Graphics, Czech Technical University in Prague.
Dissertation Thesis: Example-based Style Transfer.
Advised by Prof. Daniel Sýkora

Master degree study (MSc) **2016 – 2018**
Computer Science, Czech Technical University in Prague.
Master Thesis: Digital Image Processing and Image Stylization.

Bachelor degree study (BSc) **2012 – 2016**
Computer Science, Czech Technical University in Prague.
Bachelor Thesis: Architecture design and implementation of a large software system.

High school **2004 – 2012**
Mathematics, Physics, and Descriptive Geometry specialization, Gymnasium of Christian Doppler.

Professional Experience

Senior Research Scientist, Samsung Research America, California **3/2021 – Present**
Research & Development. Research and implementation of computer vision and deep learning techniques to render photorealistic virtual humans, focusing on faces. Involved conditional GANs, image-to-image translation networks, deferred neural rendering. Part of the neonlife.ai project.

Intern Research Scientist, Samsung Research America, California **4/2020 – 2/2021**
Research & Development. Research and implementation of various image-to-image and video-to-video translation neural networks for face manipulation, e.g., adding makeup, changing skin tone, adding or removing scars or wrinkles. Part of the neonlife.ai project.

Intern Research Scientist, Snap Inc., Los Angeles, California **7/2019 – 10/2019**
Research & Development. Research of new techniques on training generative adversarial networks for style transfer tasks; focused on a scenario where a minimal amount of data is available, and an interactive response is required. Furthermore, developing a shader-based real-time stylization for human portraits.

Remote Collaboration, Adobe Research, USA **9/2017 – 12/2019**
Research & Development. Remote collaboration on several research projects, publications, and tech transfer project. Computer graphics; patch-based style transfer; neural-network-based style transfer.

Intern Research Scientist, Adobe Research, Seattle, Washington. 7/2018 – 10/2108
Research & Development. Combining neural-network-based and patch-based style transfer methods. Chunk-based style transfer method with a focus on real-time performance.

Intern Research Scientist, Adobe Research, San Jose, California 9/2017 – 12/2107
Research & Development. Guiding patch-based style transfer method using convolutional neural networks, image harmonization, and histogram optimization. Integrating developed style transfer method into Adobe Photoshop.

Software Architect and Developer, Dynavix, Prague, Czechia 5/2014 – 9/2017
Software Architecture & Development. The navigation application for smartphones. C++, Java, Objective-C, C#.

Software Developer, World of Warcraft game server, Prague, Czechia 2/2013 – 5/2014
Software Development. The World of Warcraft game server. Extending game mechanics, scripting artificial intelligence, data-mining. C++, C#.

Publications

S. Ravichandran, **O. Texler**, D. Dinev, and HJ. Kang: **Synthesizing Photorealistic Virtual Humans Through Cross-modal Disentanglement.** *preprint, arXiv:2209.01320* (August 2022)

A. Texler, **O. Texler**, M. Kučera, M. Chai, and D. Sýkora: **FaceBlit: Instant Real-time Example-based Style Transfer to Facial Videos.** In *Proceedings of the ACM in Computer Graphics and Interactive Techniques, 4(1):14* (I3D'21, April 2021)

F. Hauptfleisch, **O. Texler**, A. Texler, J. Křivánek, and D. Sýkora: **StyleProp: Real-time Example-based Stylization of 3D Models.** In *Computer Graphics Forum, 39(7):575–586* (Pacific Graphics 2020)

O. Texler, D. Futschik, M. Kučera, O. Jamriška, Š. Sochorová, M. Chai, S. Tulyakov, and D. Sýkora: **Interactive Video Stylization Using Few-Shot Patch-Based Training.** In *ACM Transactions on Graphics, 39(4):73* (SIGGRAPH 2020, August 2020) **Featured at RealTime Live @ SIGGRAPH 2020, won Best in Show Award.**

O. Texler, D. Futschik, J. Fišer, M. Lukáč, J. Lu, E. Shechtman, and D. Sýkora: **Arbitrary Style Transfer Using Neurally-Guided Patch-Based Synthesis.** In *Computers & Graphics, 87:62–71* (January 2020)

O. Jamriška, Š. Sochorová, **O. Texler**, M. Lukáč, J. Fišer, J. Lu, E. Shechtman, and D. Sýkora: **Stylizing Video by Example.** In *ACM Transactions on Graphics, 38(4):107* (SIGGRAPH 2019, Los Angeles, California, July 2019)

O. Texler, J. Fišer, M. Lukáč, J. Lu, E. Shechtman, and D. Sýkora: **Enhancing Neural Style Transfer using Patch-Based Synthesis.** In *Proceedings of the 8th ACM/EG Expressive Symposium, pp. 43–50* (Expressive 2019, Genoa, Italy, May 2019)

D. Sýkora, O. Jamriška, **O. Texler**, J. Fišer, M. Lukáč, J. Lu, and E. Shechtman: **StyleBlit: Fast Example-Based Stylization with Local Guidance.** In *Computer Graphics Forum, 38(2):83–91* (Eurographics 2019, Genoa, Italy, May 2019)

O. Texler and D. Sýkora: **Example-Based Stylization of Navigation Maps on Mobile Devices.** In *Proceedings of the 22nd Central European Seminar on Computer Graphics.*, (CESCG 2018, Smolenice, Slovakia, 2018)

Patents

O. Texler, D. Dinev, A. Gupta, H.J. Kang, A. Liot, S. Ravichandran, S. Sadi: **Hierarchical Creation of Visual Data for Generating Images of Human Faces**, *Provisional App. No. 63/349,289*, June 2022

S. Ravichandran, A. Liot, D. Dinev, **O. Texler**, H.J. Kang, J. Palan, S. Sadi: **Creating Talking Animations from Visemes Audio Features**, *Provisional App. No. 63/349,298*, June 2022

S. Ravichandran, D. Dinev, **O. Texler**, A. Gupta, J. Palan, H.J. Kang, A. Liot, S. Sadi: **Disentanglement of Modalities Through Augmentation for Generating Virtual Avatars**, *Provisional App. No. 63/359,950*, July 2022

Selected Talks & Interviews

SIGGRAPH Now 2021, invited talk, link
2d3d.ai, invited talk, 2021, link
BBC News Arabic, interview, 2020, link
RealTime Live!, session at SIGGRAPH 2020, link
ECCV 2020, short oral, link
SIGGRAPH 2020, paper session, link
Expressive 2019, paper session
EuroGraphics 2019, paper session
CESCG 2018, paper session

Review Services

WACV 2023, IEEE/CVF Winter Conference on Applications of Computer Vision
TVCG 2022, IEEE Transactions on Visualization and Computer Graphics
SIGGRAPH Asia 2022, ACM Transactions on Graphics
SIGGRAPH 2022, ACM Transactions on Graphics
SIGGRAPH Asia 2021, ACM Transactions on Graphics
Pacific Graphics 2021, Computer Graphics Forum

Awards

Joseph Fourier Prize Laureate, 2021
Best in Show Award, Real-Time Live, SIGGRAPH 2020

Student Supervision

A. Moravcová, MSc, CTU in Prague
A. Sternwaldová, MSc, CTU in Prague

Programming & Tools

C/C++, Python, Java
PyTorch, OpenCV, CUDA