

EDUCATION

Ph.D. in Computer Science, Massachusetts Institute of Technology , Cambridge, MA Geometric Data Processing Group, Department of Electrical Engineering & Computer Science National Science Foundation (NSF) Graduate Research Fellowship Thesis: <i>Deep Learning on Geometry Representations</i> (advisor: Justin Solomon)	Sept. 2017–May 2022 GPA 5.00/5.00
S.M. in Computer Science, Massachusetts Institute of Technology , Cambridge, MA Thesis: <i>Deep Learning-Based Methods for Parametric Shape Prediction</i> (advisor: Justin Solomon)	Sept. 2017–Jun. 2019 GPA 5.00/5.00
B.A. in Pure Mathematics and Computer Science, Pomona College , Claremont, CA Phi Beta Kappa, Pomona College Scholar, cum laude, distinction in mathematics senior exercise Thesis: <i>SimpleX: Software tools for visualizing functions on simplicial complexes</i> (advisor: Vin de Silva)	Sept. 2013–May 2017 GPA 3.91/4.00
Aquincum Institute of Technology and Budapest Semesters in Mathematics , Budapest, Hungary	Sept. 2015–Dec. 2015
San Francisco University High School , San Francisco, CA	Sept. 2009–May 2013

WORK EXPERIENCE

Netflix , Boston, MA Senior Research Scientist Research Scientist <ul style="list-style-type: none">Working on machine learning and computer graphics for content creation	Jul. 2023–Present Jul. 2022–Jul. 2023
Pixar Animation Studios , Emeryville, CA Research Intern (hosted by Mark Meyer and Fernando de Goes) <ul style="list-style-type: none">Worked on a learning-based method for UV mapping 3D objects	Jun. 2021–Sept. 2021
Adobe Research , San Francisco, CA Research Intern (hosted by Michaël Gharbi) <ul style="list-style-type: none">Developed a self-supervised learning approach for automatically decomposing animations into sprites	May 2019–Apr. 2020
Research Intern (hosted by Matthew Fisher and Vladimir G. Kim) <ul style="list-style-type: none">Developed a method for predicting vector graphics and parametric shapes using deep networks	May 2018–Nov. 2018
Google , Mountain View, CA Software Engineering Intern <ul style="list-style-type: none">Designed and implemented a pipeline for analyzing and visualizing live streams of Google Maps location data (C++/Python/JS)Received a Peer Bonus for a successful demo, which was shown on realtime data to an audience of over 100 people	May 2017–Aug. 2017
Lawrence Berkeley National Laboratory , Berkeley, CA Computational Topology Research Assistant (hosted by Dmitriy Morozov) <ul style="list-style-type: none">Developed new algorithms and software (C++) for the analysis of scientific data using methods in computational geometry and topology	May 2016–Aug. 2016
Harvey Mudd College , Claremont, CA Computer Science Research Assistant (hosted by Ran Libeskind-Hadas) <ul style="list-style-type: none">Developed and analyzed computational biology algorithms for phylogenetic tree reconciliation	May 2015–Jul. 2015
Transensys LLC , San Mateo, CA R&D Intern <ul style="list-style-type: none">Designed an audio content visualization system and developed mobile app (Objective C) as proof of concept	May 2014–Dec. 2014
Associated Students of Pomona College (ASPC) , Claremont, CA Web Developer <ul style="list-style-type: none">Developed and maintained tools (Python/Django) for the Pomona student body on the ASPC website	Sept. 2013–Dec. 2016

PUBLICATIONS

Y. Deng, W. Lin, L. Li, <u>D. Smirnov</u> , R. Burgert, N. Yu, V. Dedun, M. H. Taghavi. Infinite-Resolution Integral Noise Warping for Diffusion Models . International Conference on Learning Representations (ICLR), 2025, Singapore.	
W. Lin, <u>D. Smirnov</u> , R. Smith. A Diffusion-Based Texturing Pipeline for Production-Grade Assets . SIGGRAPH Talks, 2024, Denver.	
<u>D. Smirnov</u> , C. LeGendre, X. Yu, P. Debevec. Magenta Green Screen: Spectrally Multiplexed Alpha Matting with Deep Colorization . The Digital Production Symposium (DigiPro), 2023, Los Angeles.	
P. Zhang, <u>D. Smirnov</u> , J. Solomon. Wassersplines for Stylized Neural Animation . Symposium on Computer Animation (SCA), 2022, Durham. Best Paper Honorable Mention (top 4% of submitted papers).	

- D. Palmer*, D. Smirnov*, S. Wang, A. Chern, J. Solomon. **DeepCurrents: Learning Implicit Representations of Shapes with Boundaries**. Conference on Computer Vision and Pattern Recognition (CVPR), 2022, New Orleans. (* denotes equal contribution)
- D. Smirnov, M. Gharbi, M. Fisher, V. Guizilini, A.A. Efros, J. Solomon. **MarioNette: Self-Supervised Sprite Learning**. Conference on Neural Information Processing Systems (NeurIPS), 2021, virtual.
- L. Li, P. Zhang, D. Smirnov, S.M. Abulnaga, J. Solomon. **Interactive All-Hex Meshing via Cuboid Decomposition**. SIGGRAPH Asia 2021, Tokyo.
- D. Smirnov and J. Solomon. **HodgeNet: Learning Spectral Geometry on Triangle Meshes**. SIGGRAPH, 2021, virtual.
- N. Girard, D. Smirnov, J. Solomon, Y. Tarabalka. **Polygonal Building Segmentation by Frame Field Learning**. Conference on Computer Vision and Pattern Recognition (CVPR), 2021, virtual. Oral Presentation, Best Paper Nomination (top 0.5% of submitted papers).
- D. Smirnov, M. Bessmeltsev, J. Solomon. **Learning Manifold Patch-Based Representations of Man-Made Shapes**. International Conference on Learning Representations (ICLR), 2021, virtual.
- N. Girard, D. Smirnov, J. Solomon, Y. Tarabalka. **Regularized Building Segmentation by Frame Field Learning**. IEEE International Geoscience and Remote Sensing Symposium (IGARSS), 2020, virtual. Oral Presentation.
- D. Smirnov, M. Fisher, V. Kim, R. Zhang, J. Solomon. **Deep Parametric Shape Predictions using Distance Fields**. Conference on Computer Vision and Pattern Recognition (CVPR), 2020, virtual.
- D. Smirnov, D. Morozov. **Triplet Merge Trees**. *Topological Methods in Data Analysis and Visualization V*, 2020. Presented at Topology-Based Methods in Visualization (TopoInVis), 2017, Tokyo. Best Paper Award.
- W. Ma, D. Smirnov, R. Libeskind-Hadas. **DTL Reconciliation Repair**. *BMC Bioinformatics* 18, 2017. Presented at Asia Pacific Bioinformatics Conference (APBC), 2017, Shenzhen.
- S. Devadoss, Z. Epstein, D. Smirnov. **Visualizing Scissors Congruence**. Symposium on Computational Geometry (SoCG), 2016, Boston.
- W. Ma, D. Smirnov, J. Forman, A. Schweickart, C. Slocum, S. Srinivasan, R. Libeskind-Hadas. **DTL-RnB: Algorithms and Tools for Summarizing the Space of DTL Reconciliations**. *IEEE/ACM Transactions on Computational Biology and Bioinformatics* 15.2, 2018. Presented at Asia Pacific Bioinformatics Conference (APBC), 2016, San Francisco.

PATENTS

Techniques for Generating Mattes for Images (US20240378768A1, filed April 3, 2024)
Paul E. Debevec, Dmitriy Smirnov, Xueming Yu, Chloe Legendre (original assignee: Netflix)

PROFESSIONAL ACTIVITIES

Invited talks

<i>Magenta Green Screen: Spectrally Multiplexed Alpha Matting with Deep Colorization</i> , The Digital Production Symposium (DigiPro)	Aug. 2023
<i>Deep Learning on Geometry Representations</i>	
• Princeton University, DataX Tutorial Workshop on Machine Learning for Experimental Science	May 2022
• École des ponts ParisTech, IMAGINE Group	Mar. 2022
• Stanford University, NeuroAiLab	Feb. 2022
• Université de Montréal, Department of Computer Science and Operations Research	Jan. 2022
• Stanford University, Geometric Computation Group	Dec. 2021
• Netflix	Dec. 2021
• NVIDIA	Dec. 2021
• Adobe Research	Dec. 2021
<i>Deep Learning for Geometry</i> , The second workshop on Learning 3D Representations for Shape and Appearance at ICCV	Oct. 2021
<i>Deep Learning on Geometric Data</i> , Massachusetts Institute of Technology, AI@MIT Reading Group	May 2021

Reviewer

SIGGRAPH, SIGGRAPH Asia, ACM Transactions on Graphics, CVPR, ECCV, ICCV, ICML, ICLR, NeurIPS, IEEE Transactions on Pattern Analysis and Machine Intelligence, 3DV, IEEE Transactions on Visualization & Computer Graphics, Computer Graphics Forum, IEEE Transactions on Instrumentation & Measurement, Computers & Graphics, Shape Modeling International, IEEE Transactions on Circuits and Systems for Video Technology, IEEE Transactions on Image Processing, Pacific Graphics

Organization and service

International Program Committee, Eurographics	2024–2025
International Program Committee, Symposium on Geometry Processing (SGP)	2023–2025
Mentor, SIGGRAPH Research Career Development Committee Grad School Application Mentorship Program	2021
Program Committee, Workshop on Sketching for Human Expressivity (SHE) at ICCV	2021
Admissions Committee, Summer Geometry Institute (SGI) at MIT	2021–2023
Advisory Board, Yokai.ai	2020–2022
Evaluation Committee, Graphics Replicability Stamp Initiative (GRSI)	2019–2025

AWARDS

Best Paper Honorable Mention, Symposium on Computer Animation (SCA)	2022
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Outstanding Reviewer, CVPR	2021
Top 33% Reviewer, ICML	2020
Top 50% Reviewer, NeurIPS	2019
Experts' Choice, NSF Vizzies Visualization Challenge	2018
NSF Graduate Research Fellowship	2017–2022
Google Peer Bonus	2017
Distinction in Mathematics Senior Exercise, Pomona College	2017
Best Paper, Topology-Based Methods in Visualization (TopoInVis)	2017
People's Choice, Claremont 5C Hackathon	2016
First Place (advanced group), Claremont 5C Hackathon	2015
Democracy 2.1 Sponsor Prize, Stanford TreeHacks Hackathon	2014
Second Place (advanced group), Claremont 5C Hackathon	2014

TEACHING

Pomona College, Claremont, CA		Massachusetts Institute of Technology, Cambridge, MA	
Math 145: Topics in Topology and Geometry (TA)	Spring 2017	6.837: Computer Graphics (TA)	Fall 2020
Math 103: Combinatorics (TA)	Fall 2016		
CS 51: Intro to Computer Science (TA)	Fall 2014, Spring 2016		
CS 81: Computability and Logic (TA)	Spring 2015		
Math 60: Linear Algebra (grader)	Fall 2014		

SKILLS

Languages and tools	Python, PyTorch, C++, Git, LaTeX, Photoshop, Illustrator, Premiere, Nuke, Blender, Maya
Areas of interest	deep learning, computer graphics, geometry processing, computer vision, algorithms, topological data analysis
Other	fluent in English and Russian, proficient in Spanish, conversational in Hungarian