

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 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 2019–Apr. 2020 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

<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*, <u>D. Smirnov*</u> , 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)
<u>D. Smirnov</u> , 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.

PROFESSIONAL ACTIVITIES

Invited talks

Magenta Green Screen: Spectrally Multiplexed Alpha Matting with Deep Colorization, The Digital Production Symposium (DigiPro) Aug. 2023

Deep Learning on Geometry Representations

- 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 Research Dec. 2021
- NVIDIA Research Dec. 2021
- Adobe Research Dec. 2021

Deep Learning for Geometry, The second workshop on Learning 3D Representations for Shape and Appearance at ICCV Oct. 2021

Deep Learning on Geometric Data, 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

International Program Committee, Symposium on Geometry Processing (SGP) 2023–2024

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

Program Committee, Graphics Replicability Stamp Initiative (GRSI) 2019–2024

AWARDS

Best paper honorable mention, Symposium on Computer Animation (SCA) 2022

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, computational topology
Other	fluent in English and Russian, proficient in Spanish, conversational in Hungarian