Dmitriy (Dima) Smirnov

dimas@netflix.com | https://dmsm.github.io

EDUCATION

Ph.D. in Computer Science, Massachusetts Institute of Technology, Cambridge, MA — Sept. 2017–May 2022
Geometric Data Processing Group, Department of Electrical Engineering & Computer Science — GPA 5.00/5.00
National Science Foundation (NSF) Graduate Research Fellowship
Thesis: *Deep Learning on Geometry Representations* (advisor: Justin Solomon)

S.M. in Computer Science, Massachusetts Institute of Technology, Cambridge, MA — Sept. 2017–Jun. 2019
Thesis: *Deep Learning-Based Methods for Parametric Shape Prediction* (advisor: Justin Solomon) — GPA 5.00/5.00

B.A. in Pure Mathematics and Computer Science, Pomona College, Claremont, CA — Sept. 2013–May 2017
Phi Beta Kappa, Pomona College Scholar, cum laude, distinction in mathematics senior exercise — GPA 3.91/4.00
Thesis: *SimpleX: Software tools for visualizing functions on simplicial complexes* (advisor: Vin de Silva)

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 — Jul. 2023–Present
Research Scientist — Jul. 2022–Jul. 2023
- Working on machine learning and computer graphics for content creation

Pixar Animation Studios, Emeryville, CA
Research Intern (hosted by Mark Meyer and Fernando de Goes) — Jun. 2021–Sept. 2021
- Worked on a learning-based method for UV mapping 3D objects

Adobe Research, San Francisco, CA
Research Intern (hosted by Michaël Gharbi) — May 2019–Apr. 2020
- Developed a self-supervised learning approach for automatically decomposing animations into sprites
Research Intern (hosted by Matthew Fisher and Vladimir G. Kim) — May 2018–Nov. 2018
- Developed a method for predicting vector graphics and parametric shapes using deep networks

Google, Mountain View, CA
Software Enginering Intern — May 2017–Aug. 2017
- 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

Lawrence Berkeley National Laboratory, Berkeley, CA
Computational Topology Research Assistant (hosted by Dmitriy Morozov) — May 2016–Aug. 2016
- Developed new algorithms and software (C++) for the analysis of scientific data using methods in computational geometry and topology

Harvey Mudd College, Claremont, CA
Computer Science Research Assistant (hosted by Ran Libeskind-Hadas) — May 2015–Jul. 2015
- Developed and analyzed computational biology algorithms for phylogenetic tree reconciliation

Transensys LLC, San Mateo, CA
R&D Intern — May 2014–Dec. 2014
- Designed an audio content visualization system and developed mobile app (Objective C) as proof of concept

Associated Students of Pomona College (ASPC), Claremont, CA
Web Developer — Sept. 2013–Dec. 2016
- Developed and maintained tools (Python/Django) for the Pomona student body on the ASPC website

PUBLICATIONS

D. Smirnov, 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, D. Smirnov, 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, <u>D. Smirnov</u>, S.M. Abulnaga, J. Solomon. **Interactive All-Hex Meshing via Cuboid Decomposition.** SIGGRAPH Asia 2021, Tokyo.

<u>D. Smirnov</u> and J. Solomon. **HodgeNet: Learning Spectral Geometry on Triangle Meshes.** SIGGRAPH, 2021, virtual.

N. Girard, <u>D. Smirnov</u>, 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).

<u>D. Smirnov</u>, M. Bessmeltsev, J. Solomon. **Learning Manifold Patch-Based Representations of Man-Made Shapes.** International Conference on Learning Representations (ICLR), 2021, virtual.

N. Girard, <u>D. Smirnov</u>, J. Solomon, Y. Tarabalka. **Regularized Building Segmentation by Frame Field Learning.** IEEE International Geoscience and Remote Sensing Symposium (IGARSS), 2020, virtual. Oral Presentation.

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

<u>D. Smirnov</u>, 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, <u>D. Smirnov</u>, R. Libeskind-Hadas. **DTL Reconciliation Repair.** *BMC Bioinformatics* 18, 2017. Presented at Asia Pacific Bioinformatics Conference (APBC), 2017, Shenzhen.

S. Devadoss, Z. Epstein, <u>D. Smirnov</u>. **Visualizing Scissors Congruence.** Symposium on Computational Geometry (SoCG), 2016, Boston.

W. Ma, <u>D. Smirnov</u>, 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

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)	2019–2023

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

Math 145: Topics in Topology and Geometry (TA)	Spring 2017
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

Massachusetts Institute of Technology, Cambridge, MA

6.837: Computer Graphics (TA)	Fall 2020

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