

## Elena Sizikova

Moore Sloan Faculty Fellow/Assistant Professor, Center for Data Science, New York University (NYU)

Postdoctoral Associate, Pelli Lab, Department of Psychology, New York University (NYU)

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### Education

**Princeton University, Department of Computer Science**

*PhD Student and National Science Foundation (NSF) Fellow advised by Prof. Thomas Funkhouser*

Princeton, NJ

2013 - 2019

**University of Oxford**

*BA Mathematics and Computer Science*

Oxford, UK

2010 - 2013

### Work Experience

**New York University**

*Moore Sloan Faculty Fellow/Assistant Professor*

New York, NY

September 2019 - Present

**New York University**

*Postdoctoral Associate, Denis Pelli Lab, Department of Psychology*

New York, NY

September 2019 - Present

**Siemens Healthcare, Vision Technologies and Solutions (VTS) Group**

*Research Intern*

Princeton, NJ

June 2015 - April 2016, June 2017 - November 2017

**Adobe Research, Creative Technologies Lab (CTL)**

*Research Intern*

Seattle, WA

June 2016 - September 2016

**Heidelberg Institute for Theoretical Studies (HITS)**

*Intern Software Developer*

Heidelberg, Germany

June 2013 - October 2013

**Art of Problem Solving Inc**

*Instructor Contractor*

Remote

August 2011 - Present

**Codeacademy**

*Teaching Assistant Contractor*

Princeton, NJ and New York, NY

Fall 2014

**UCLA IPAM Research in Industrial Projects for Students Program (RIPS)**

*Team Project Manager*

Los Angeles, CA

June 2012 - August 2012

**Hein Lab, Oxford University**

*Computational Biology Summer School Participant and Research Assistant*

Oxford, UK

August 2011 - September 2012

**Credit Suisse Spring Insight Program**

*Intern*

London, UK

April 2011

**Bank of America Spring Insight Program**

*Intern*

London, UK

April 2011

### Publications

- F. Wei, **E. Sizikova**, A. Sud, T. Funkhouser, S. Rusinkiewicz: Learning to Infer Semantic Parameters for 3D Shape Editing. Accepted to the International Conference on 3D Vision (3DV) 2020.
- S. Siddiqui, **E. Sizikova**, G. Roig, N. J. Majaj, D. G. Pelli: Using Human Psychophysics to Evaluate Generalization in Scene Text Recognition Models. arXiv:2007.00083. 2020.
- **E. Sizikova**, C. Long, O. Kumbhar, N. Majaj, D. G. Pelli : Comparing Word Recognition by Humans and Deep Neural Networks. Vision Sciences Society (VSS) Meeting 2020.

- M. Ahn, N. Eikmeier, J. Haddock, L. Kassab, A. Kryshchenko, K. Leonard, D. Needell, R. W. M. A. Madushani, **E. Sizikova**, C. Wang : On Large-Scale Dynamic Topic Modeling with Nonnegative CP Tensor Decomposition. Women in Data Science and Mathematics (WiSDM) Workshop Proceedings, "Advances in Data Science", AWM-Springer series, 2020.
- **E. Sizikova**: Shape Synthesis Using Structure-Aware Reasoning. PhD Thesis, Princeton University, 2019.
- **E. Balashova**, J. Wang, V. Singh, B. Georgescu, B. Teixeira, A. Kapoor: 3D Organ Shape Reconstruction from Topogram Images. International Conference on Information Processing in Medical Imaging (IPMI) 2019.
- I. Demir, C. Hahn, K. Leonard, G. Morin, D. Rahbani, A. Panotopoulou, A. Fondevilla, **E Balashova**, B. Durix, A. Kortylewski : SkelNetOn 2019 Dataset and Challenge on Deep Learning for Geometric Shape Understanding. CVPR 2019 Workshops.
- I. Amerini, **E. Balashova**, S. Ebrahimi, K. Leonard, A. Nagrani, A. Salvador : WiCV 2019: The Sixth Women In Computer Vision Workshop. CVPR 2019 Workshops.
- **E. Balashova**, A. Bermano, V. Kim, S. DiVerdi, A. Hertzmann, T. Funkhouser: Learning a Stroke-Based Representation for Fonts. Computer Graphics Forum (CGF) 2018, to appear.
- **E. Balashova**, V. Singh, B. Teixeira, J. Wang, T. Chen, T. Funkhouser. Structure-Aware Shape Synthesis. International Conference on 3D Vision (3DV) 2018. **Spotlight Presentation**.
- B. Teixeira, V. Singh, K. Ma, B. Tamersoy, T. Chen, Y. Wu, **E. Balashova**, D. Comaniciu: Generating Synthetic X-ray Images of a Person from the Surface Geometry. CVPR 2018. **Spotlight Presentation**.
- **E. Sizikova**, T. Funkhouser: Fresco Reconstruction Using a Genetic Algorithm. ACM Journal on Computing and Cultural Heritage (JOCCH) 2018.
- A. Stank, D.B. Kokh, M. Horn, **E. Sizikova**, R. Neil, J. Panecka, S. Richter, R.C. Wade: TRAPP webserver: predicting protein binding site flexibility and detecting transient binding pockets. Journal of Nucleic Acids Research 2017.
- **E. Sizikova**, V. K. Singh, B. Georgescu, M. Halber, K. Ma, T. Chen: Enhancing Place Recognition using Joint Intensity - Depth Analysis and Synthetic Data. ECCV Workshop on Virtual/Augmented Reality for Visual Artificial Intelligence (VARVAI), 2016. **Best Paper Award**.
- **E. Sizikova**, T. Funkhouser: Fresco Reconstruction Using a Genetic Algorithm. EUROGRAPHICS Workshop on Graphics and Cultural Heritage (GCH), 2016. **Best Paper Award**.
- **E. Sizikova**, T. Funkhouser: Automatically Assembling Frescos from Noisy Pairwise Fragment Measurements. Computer Applications and Quantitative Methods in Archaeology (CAA), 2015. Oral Presentation.
- O. Fried, S. Di Verdi, M. Halber, **E. Sizikova**, A. Finkelstein: IsoMatch: Creating Informative Grid Layouts. Eurographics, 2015.
- C. Quaranta\*, I. A. Ibarra\*, E. Schwartz\*, **E. Sizikova\***: Improving Cross-lingual Search Quality. Joint Mathematical Meetings (JMM) 2013. Invited Talk. (\* denotes equal contribution.)
- R. Lyngsø, J. Anderson, **E. Sizikova**, A. Badugu, T. Hyland and J. Hein. Frnakenstein: Multiple target inverse RNA folding. BMC Bioinformatics, 2012. High access factor noted by BMC Bioinformatics.

## Awards and Honors

### Elsevier/Vision Research Travel Award

Travel grant to present a poster at the Vision Science Society (VSS) Meeting

May 2020

### Moore Sloan Data Science (MSDS) Summit

Travel grant to attend and present a poster at the annual summit in Santa Fe, NM

November 2019

### Moore Sloan Fellowship

Research support for data science research at the NYU Center for Data Science.

2019 - 2021

### Women in Data Science and Mathematics (WiSDM) 2019 Travel Grant

Travel grant to attend the workshop in Brown University, Providence Rhode Island

July 2019

**AWM SIAM Travel Grant**

*Support to the attend AWM Workshop at the 2018 SIAM Annual Meeting and present a poster.*

*July 2018*

**French-American Doctoral Exchange Program (FADEx) Scholarship**

*Support to attend an AI doctoral exchange program in Sophia-Antipolis, Grenoble, and Paris, France.*

*June 2018*

**ECCVW Best Paper Award, sponsored by Xerox Research Europe and Facebook AI Research**

*Awarded for Enhancing Place Recognition Project*

*October 2016*

**Eurographics GCH Best Paper Award**

*Awarded for Fresco Project*

*October 2016*

**CRA-W/Princeton Travel Grant**

*Support to attend the CRA-W Grad Cohort Workshop*

*April 2016*

**School of Eng. and Appl. Science (SEAS) Fellowship**

*Support to attend the Grace Hopper Conference in Phoenix, AZ*

*October 2014, October 2015*

**Center for Digital Humanities (CDH) Fellowship**

*Support to Computer Appl. in Archaeology (CAA) Conference in Siena, Italy*

*December 2014*

**NSF Graduate Fellowship**

*Support of graduate research and tuition for the period of three years*

*June 2014 - June 2018*

**St. Annes College Exhibition**

*Awarded for excellent performance in Moderations and Part A exams*

*October 2011, October 2012*

**MAA Undergraduate Student Poster Session Travel Grant**

*Awarded to support travel to JMM in San Diego, California*

*November 2012*

**Women in Machine Learning (WIML) Travel Scholarship**

*Awarded to support travel to the 2012 WIML at Lake Tahoe, NV*

*October 2012*

**Association of Women in Mathematics (AWM) Essay Contest**

*Honorable Mention*

*April 2009*

**1st Place in Intl. Caucus for Women in Stat. Poster Competition**

*Poster titled: Potential Risk Factors for Drug Addiction*

*February 2009*

**USA Mathematical Talent Search Silver and Bronze Medalist**

*USAMTS is a prestigious nationwide competition in mathematics*

*September 2007 - May 2009*

**Invited Talks**

**October 2020:** Comparing Word Recognition by Humans and Deep Neural Networks and Application of Understanding Dyslexia, Academic Data Science Alliance (ADSA) Annual Meeting

**July 2020:** Comparing Humans and Neural Networks with Applications to Studying Dyslexia, Summer Incubator Lunch and Learn (NYU Data Science)

**April 2020:** Shape Synthesis Using Structure-Aware Reasoning and Medical Applications, California State University, Channel Islands (CSI-CI)

**November 2019:** Structure-Aware Reasoning and Learning, Samsung Research NY

**October 2019:** Shape Synthesis Using Structure-Aware Reasoning and Medical Applications (NYU Data Science)

**June 2019:** Structure-Aware Shape Analysis in Medical Imaging, NYU School of Medicine, Radiology Seminar

**May 2019:** Learning A Stroke-Based Representation for Fonts, EUROGRAPHICS 2019

**July 2018:** Structure-Aware Shape Synthesis, Max Planck Institute for Intelligent Systems (MPI)

**September 2018:** Structure-Aware Shape Synthesis, 3DV 2018

**October 2016:** Wall Painting Reconstruction Using a Genetic Algorithm, EUROGRAPHICS Workshop on Graphics and Cultural Heritage (GCH) 2016

**March 2015:** Automatically Assembling Frescos From Noisy Pairwise Fragment Measurements, Computer Applications and Quantitative Methods in Archaeology (CAA) 2015

**January 2013:** Improving Cross-lingual Search Quality, Joint Mathematical Meetings (JMM) 2013

**Grants and Funding**

**May 2020:** NYU Center For Data Science/DS3/Moore Sloan grant for project titled "Interpretable Tensor Factorization Methods for COVID-19 Progression Analysis", \$5,000.

**June 2014 - June 2018:** NSF Graduate Fellowship, support of graduate research and tuition for the period of three years, \$132,000.

## Teaching

**Instructor for Capstone Project and Presentation Course**

*NYU Center for Data Science (CDS)*

*Fall 2020*

**Instructor for Capstone Project and Presentation Course**

*NYU Center for Data Science (CDS)*

*Fall 2019*

**Teaching Assistant for COS424: Fundamentals of Machine Learning**

*Princeton University, Department of Computer Science*

*Princeton, NJ*

*February 2016 - June 2016*

**Teaching Assistant for COS226: Data Structures and Algorithms**

*Princeton University, Department of Computer Science*

*Princeton, NJ*

*September 2015 - January 2016*

## Service and Mentoring Activities

**NYU Center for Data Science (CDS) Diversity and Inclusion Committee**

*Faculty Fellow Rep.*

*Fall 2020*

**NYU Center for Data Science (CDS) Summer Incubator Internship Program**

*Mentor*

*Summer 2020*

**CVPR Women in Computer Vision (WICV) Workshop**

*Mentor*

*June 2020*

**Try AI, Diversity and Inclusion Event at AAAI 2020**

*Mentor*

*February 2020*

**Deep Learning for Geometric Shape Understanding (SkelNetOn)**

*Program Committee/Point SkelNetOn Keeper*

*November 2018 - June 2019*

**Women in Computer Vision Workshop (WiCV) for CVPR 2019**

*Organizer*

*October 2018 - June 2019*

**Graduate Women in Science and Engineering (GWISE) - NYU High School Conference**

*Mentor*

*November 2018*

**AI-4ALL Summer camp**

*Part-time mentor for the self-driving cars team.*

*Princeton, NJ*

*August 2018*

**Princeton University Math Club Mentoring Mobius**

*Mentor to 4 undergraduate students*

*Princeton, NJ*

*October 2016 - December 2016*

**Coalition for Queens (C4Q)**

*Teaching Assistant for Access Code Program HTML/CSS Workshop*

*Brooklyn, NY*

*February 2015*

**University of Oxford**

*Math and CS Representative, Math Undergraduate Representative Committee (MURC)*

*Oxford, UK*

*October 2010 - June 2013*

**University of Oxford**

*Oxford Salsa Society Webmaster*

*Oxford, UK*

*October 2010 - May 2013*

## Paper Reviewing

- International Journal of Computer Vision (IJCV), 2017
- Journal of Computers & Graphics (JCG), 2016
- Shape Modelling International (SMI), 2014
- Pacific Graphics (PG), 2018
- British Machine Learning Conference (BMVC), 2019
- Special Interest Group on Computer Graphics and Interactive Techniques (SIGGRAPH), 2020

- Computer Vision and Pattern Recognition (CVPR) Workshop on Deep Learning for Geometric Computing (DLGC), 2020
- Neural Information Processing Systems (NeurIPS), 2020

## **Students Supervised**

- Tianshu Chu (Summer Incubator Internship, Masters Level), Summer 2020, Fall 2020, NYU
- Xinmeng Li (Summer Incubator Internship, Masters Level), Summer 2020, Fall 2020, NYU
- Kuan-Lin Liu (Independent Study, Masters Level), Summer 2020, NYU
- Zane Dennis (Summer COVID-19/X-ray Internship, Masters Level), Summer 2020, NYU
- Sahar Siddiqui (Independent Study, Masters Level), Spring 2020, NYU
- Diksha Meghwal (Independent Study, Masters Level), Spring 2020, NYU
- Jatin Khilnani (CDS Inference and Representation (Masters) Course), Fall 2019, NYU
- Shuting Gu (CDS Capstone Project Masters) Course, Fall 2019, NYU), joint with Anastasios Noulas
- Anshan He (CDS Capstone Project Masters) Course, Fall 2019, NYU), joint with Anastasios Noulas
- Weiyang Wen (CDS Capstone Project Masters) Course, Fall 2019, NYU), joint with Anastasios Noulas
- Bing Zou (CDS Capstone Project Masters) Course, Fall 2019, NYU), joint with Anastasios Noulas