

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

Codecademy

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

Select Publications

- 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. Submitted to Women in Data Science and Mathematics (WiSDM) Workshop Proceedings, "Advances in Data Science", AWM-Springer series.

- **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**

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 and Service

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***NYU Center for Data Science (CDS) Capstone Project and Presentation Course***Instructor**Fall 2019***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***Princeton University***Teaching Assistant for COS424: Fundamentals of Machine Learning**Princeton, NJ**February 2016 - June 2016***Princeton University***Teaching Assistant for COS226: Data Structures and Algorithms**Princeton, NJ**September 2015 - January 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 Reviewer**

- 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
- SIGGRAPH, 2020
- CVPR Workshop on Deep Learning for Geometric Computing (DLGC), 2020
- NeurIPS, 2020

Students Supervised

- Tianshu Chu (Summer Incubator Internship, Masters Level), Summer 2020, NYU
- Xinmeng Li (Summer Incubator Internship, Masters Level), Summer 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