Darya Filippova

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Education

2010–present **PhD**, *Computer Science*, Carnegie Mellon University, Pittsburgh, PA.
Advisor: Carl Kingsford, concentration: computational biology (visualization, algorithms for high-throughput sequencing data)
Expected graduation: August 2015

2009 **M.S.**, *Computer Science*, University of Maryland, College Park, MD.
Advisor: Ben Shneiderman

2007 **B.S.**, *Mathematics, Computer Science*, University of Maryland, College Park, MD.

Work Experience

2007–2010 **Research Assistant**, *CATT Lab, University of Maryland*, College Park, MD.
(Center for Advanced Transportation Technology)
Developed a Web interface for accessing, aggregating, and analyzing state-wide car crash records
- Improved and developed novel layouts for accident data
- Developed aggregation procedures for visualizing millions of crashes
- Oversaw undergraduate students, summer high school interns

summer 2007 **Software Development Intern**, *Carematic Systems*, Annapolis, MD.
- Designed and developed a data logging and reporting component for a Web-based client software
- Collaborated with clients and potential users to resolve issues of product usability and user satisfaction

summer 2006 **Software Development Intern**, *Microsoft*, Redmond, WA.
Designed and developed an encryption plugin for Office 12 products

2005–2006 **Research Assistant**, *CATT Lab, University of Maryland*, College Park, MD.
Designed and implemented a control panel for the navigation controls in a 3D traffic simulation system

Projects

2015 **Referee: rapid compression for sequence alignments**.
Losslessly compresses millions of alignments up to 8.2 times that of the original size in minutes, offers significant improvement relative to the related methods. Uses dictionary coding and streaming clustering to transform the data before running LZMA. Written in C++.

2014 **deplotify: calculate correlation for points in the image**.
When original data shown in a plot is not available, deplotify will take an image, identify (x, y) coordinates for the individual points, and correlate the two coordinates anew. Written in Python.

2013-2014 **Armatus: identifying topological domains in nuclear DNA conformation**.
First optimal topological domain finder; explores the space of optimal and near-optimal solutions to build a persistent set of domains across multiple scales. Establishes domain stability and hierarchical organisation of genome. Written in C++.

2011-2012 **Map of Jazz: interactive tool for jazz history exploration and analysis**.
Interactive Web application for browsing through thousands of jazz collaborations over the span of a 100 years. Highlights the most important collaborations and changes over time. Javascript (protovis), PHP, SQL.

2010-2012 **Coral: assessing consistent subgroups across diverse prediction outcomes**.
A comprehensive collection of interactive visual tools for detailed analysis of multiple classification results (e.g. from different algorithms; parameter settings; or conditions). Written in Java.

2009 **CateRank: exploring similarities and trends in categorical data collections**.
Defines and implements metrics for comparison of one- and two-dimensional categorical plots. Written in ActionScript3.

2009 **PCP: Parallel Coordinates Plot for ActoinScript3**.
Implementation of a parallel coordinates plot able to handle thousands of records. Written in ActionScript3.

2007-2009 **Exploration and visualization of crashes (EVC)**.
Web application for large-scale analysis of state-wide car crash records since 1993. Uses ActionScript3; Coldfusion; SQL.

Publications

1. Darya Filippova, Geet Duggal, Rob Patro, and Carl Kingsford. Identification of alternative topological domains in chromatin. *Algorithms for Molecular Biology*, 9:14, 2014.

2. Geet Duggal, Rob Patro, Emre Sefer, Hao Wang, Darya Filippova, Samir Khuller, and Carl Kingsford. Resolving spatial inconsistencies in chromosome conformation measurements. *Algorithms for Molecular Biology*, 8(8):10, 2013.

3. Darya Filippova, Rob Patro, Geet Duggal, and Carl Kingsford. Multiscale Identification of Topological Domains in Chromatin. In *13th International Workshop on Algorithms in Bioinformatics*, pages 300–312, Sophia Antipolis, France, 2013.

4. G. Duggal, R. Patro, E. Sefer, H. Wang, D. Filippova, S. Khuller, and C. Kingsford. Resolving Spatial Inconsistencies in Chromosome Conformation Data. In *12th International Workshop for Algorithms in Bioinformatics*, pages 288–300, Ljubljana, Slovenia, 2012.

5. Darya Filippova, Aashish Gadani, and Carl Kingsford. Coral: an integrated suite of visualizations for comparing clusterings. *BMC Bioinformatics*, 13:276, 2012.

6. Darya Filippova, Carl Kingsford, Michael Fitzgerald, and Fernando Benadon. Dynamic exploration of recording sessions between jazz musicians over time. In *SocialCom*, pages 368–376, Amsterdam, Netherlands, 2012.

7. Darya Filippova. Reducing alert fatigue for drug interactions : design principles and a prototype system. Technical report, University of Maryland, College Park, 2010.

8. Darya Filippova and Michael L. Pack. Mining Multivariate Accident Data. In *Transportation Research Board 88th Annual Meeting*, page 18, Washington, DC, 2009.

9. Michael L. Pack, Krist Wongsuphasawat, Michael VanDaniker, and Darya Filippova. ICE–Visual Analytics for Transportation Incident Datasets. In *IEEE Internation Conference on Information Reuse and Integration*, pages 200–205, LasVegas, USA, 2009.

10. Krist Wongsuphasawat, Michael Lee Pack, Darya Filippova, Michael VanDaniker, and Andreea Olea. Visual Analytics for Transportation Incident Data Sets. *Journal of Transportation Research Board*, 2138:135–145, 2009.

11. Darya Filippova and Ben Shneiderman. Interactive Exploration of Multivariate Categorical Data: Exploiting Ranking Criteria to Reveal Patterns and Outliers. Technical report, University of Maryland, 2008.

Honors, Awards, Service

2014-2015	Co-president of Grad/Undergrad Sisters (graduate women mentoring CS undergraduate females), CMU
2014-2015	Session leader and volunteer at TechNights (teaching CS concepts to middle school girls), CMU
2013, 2014	Recipient of a NIH T32 training grant T32 EB009403 ($3000)
2012	Semi-finalist for Palantir Women in Technology scholarship
2012	Recipient of a Travel Fellowship for ISMB, Long Beach, CA ($700)
2010-now	Reviewer for BioVis'12, AVI'12, alt.chi'12, RECOMB'11, Cell, Bioinformatics, RECOMB'14
2010-2012	Student representative at the Educational Committee in CS, UMD
2009	Greg Herrington Award for Excellence in Visualisation Research, TRB
2007-2009	Recipient of a Center for Advanced Transportation Technology fellowship
2006-2009	Maryland Senatorial Scholarship recipient
2008	Laureate for best computer science project at Graduate Research Interaction Day @UMD
2006-2007	Dean's List

Misc

languages, systems	C/C++, Python, Java, Scala (scripting). MacOS/Linux.
hobbies	Singing, some piano, photography, backpacking (Caucasus, Grand Teton NP, RMNP, Glacier NP), hiking with my dog Coco