Alper Sarikaya

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EDUCATION

PhD, Computer Sciences	University of Wisconsin—Madison
MS, Computer Sciences (May 2013)	Aug 2011 – Aug 2017
Bachelor of Science, Computer Science	University of Washington
Bachelor of Science, Chemistry (ACS certification)	Sept 2004 – June 2009
College Honors in Computer Science and Chemistry	

RESEARCH

I am interested in harnessing the power of data visualization and its applications to various problem domains, especially the power of visual summaries to understand and navigate large datasets. My graduate work has involved visualizing the binding interfaces of proteins to ligand substrates, visualizing overviews of large datasets and supporting identification and comparison tasks using WebGL, as well as visualizing co-occurrences of mutations on virus genomes. I am working toward creating both descriptive and prescriptive understanding of the design of visualizations designed to summarize, looking at how these visualizations are designed with respect to characteristics of the data and analyst task.

Journal Articles

Alper Sarikaya and Michael Gleicher. "Scatterplots: Tasks, Data, and Designs." *IEEE Transactions on Visualization and Computer Graphics* (InfoVis '17), 28(1). 2018.

Alper Sarikaya, Michael Gleicher and Danielle Albers Szafir. "The Design of Summary Visualizations." (*under revision*).

Alper Sarikaya, Michael Correll, Jorge Dinis, David H. O'Connor, Michael Gleicher. "Visualizing Co-occurrence of Events in Populations of Viral Genome Sequences." *Computer Graphics Forum* (EuroVis '16), 35(3): 151–160, 2016.

Danielle Albers Szafir, **Alper Sarikaya**, Michael Gleicher. "Lightness Constancy in Surface Visualization." *IEEE Transactions on Visualization and Computer Graphics*, 22(9): 2107–2121, 2016.

Michael Correll, Adam L. Bailey, **Alper Sarikaya**, David H. O'Connor, Michael Gleicher. "LayerCake: A Tool for the Visual Comparison of Viral Deep Sequencing Data." *Bioinformatics*, 31(21): 3522–3528, 2015.

Alper Sarikaya, Danielle Albers, Julie C. Mitchell, Michael Gleicher. "Visualizing Validation of Protein Surface Classifiers." *Computer Graphics Forum* (EuroVis '14), 33(3): 171–180, 2014.

Refereed Workshop Publications

Alper Sarikaya, Emanuel Zgraggen, Rob DeLine, Danyel Fisher, and Steven Drucker. "Sequence Pre-processing: Focusing Analysis of Log Event Data." In *Proceedings of the IEEE Vis Workshop on Temporal & Sequential Event Analysis*. 2016.

Alper Sarikaya, Michael Gleicher. "Using WebGL as an Interactive Visualization Medium: Our Experience Developing SplatterJs." In *Proceedings of the 2015 Data Systems for Interactive Analysis Workshop* (DSIA). 2015.

Michael Correll, Eric Alexander, Danielle Albers Szafir, **Alper Sarikaya**, Michael Gleicher. "Navigating Reductionism and Holism in Evaluation." *Proceedings of the 2014 BELIV Workshop: Beyond Time and Errors—Novel Evaluation Methods for Visualization* (BELIV '14). 2014.

Refereed Abstracts

Alper Sarikaya, Michael Gleicher. "Tasks to Tease Apart Scatterplot Design Decisions." *Poster Abstracts of IEEE VIS 2016*, October 2016.

Alper Sarikaya, Danielle Albers, Michael Gleicher. "Understanding Performance of Protein Structural Classifiers." *Poster Abstracts of IEEE VIS 2013*, October 2013.

Danielle Albers, **Alper Sarikaya**, Michael Gleicher. "Lightness Constancy in Surface Visualization." *Poster Abstracts of IEEE VIS 2013*, October 2013. **{SciVis Best Poster Award}**

Theses

"Targeting Designs of Scalable, Exploratory Summary Visualizations." PhD Thesis, University of Wisconsin-Madison, 2017.

"The Limits of Adiabatic Quantum Computation." Honors Thesis, University of Washington, 2009.

Research Experience

I was under the advisement of Professor Michael Gleicher at the University of Wisconsin—Madison in computer graphics and data visualization. My primary undergraduate research in quantum computation was under Professor Dave Bacon at the University of Washington (now at Google).

UW Graphics Laboratory   Aug 2011 – Jul 2017
University of Wisconsin—Madison, Madison, WI
http://graphics.cs.wisc.edu

+ Synthesized task-centric typologies for the principled design of scatterplots (forthcoming) from literature synthesis and the design of visual summaries from a literature content analysis

+ Designed scatterplot-based and matrix-based visualization using WebGL to support the overview of large datasets and rapid identification of 'interesting values' in the browser

+ Developed a visualization solution to view the performance of binary decision protein classifiers, allowing for visual understanding performance across corpus and individual proteins

Microsoft Research (mentor: Danyel Fisher)   May 2015 – Aug 2015
Microsoft Corporation, Redmond, WA
http://research.microsoft.com/en-us/groups/vibe/

+ Developed methods for pre-processing log event data to minimize noise and focus downstream analysis of log file data

GEMSEC (Genetically-Engineered Materials Sci. & Engr. Center)   Aug 2009 – Aug 2011
University of Washington, Seattle, WA
http://depts.washington.edu/gemsec/

+ Developed energy minimization techniques of graphite-binding peptides through MD simulation

Quantum Computation Theory Group   Jan 2008 – Jun 2009
University of Washington, Seattle, WA
http://quantum.cs.washington.edu

+ Developed code with SciPy to test polynomial speedup of adiabatic quantum algorithms over its classical counterpart

Seattle (educational peer-to-peer network)   Oct 2008 – Mar 2009
University of Washington, Seattle, WA
http://seattle.cs.washington.edu

+ Designed and constructed a proof-of-concept of MapReduce on the Repy framework. Reorganized DHT allocation of resources

UrbanSim – Public Policy and Analysis Software   Jan 2007 – Jun 2007
University of Washington, Seattle, WA
http://urbansim.org

+ Through strict test-driven development (TDD), refactored and implemented unit tests for the entire codebase

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INDUSTRY

Software Developer, PowerBI R&D   Aug 2017 – *current*
Microsoft Corporation, Redmond, WA

+ Developing visualization authoring systems and integrating visualization best-practices into the product for worldwide use

Software Development Engineer in Test II   Sep 2009 – Aug 2011
Microsoft Corporation, Redmond, WA

+ Ensured the stability of the business intelligence component of Windows crash reports; maintained and tested code that processed billions of messages daily; overlooked multi-terrabyte databases. Validated the performance and stability of telemetric data marts for Windows 8

Software Development Engineer in Test Intern   Jun 2007 – Aug 2007
Microsoft Corporation, Redmond, WA

+ Developed a testing tool to programmatically obtain and utilize virtual machines for testing System Center Virtual Machine Manager with itself

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TEACHING

Teaching Assistant (Data Visualization)   Jan 2017 – May 2017
University of Wisconsin—Madison, Madison, WI
http://graphics.cs.wisc.edu/WP/vis17spring

+ Gave six guest lectures (e.g., introduction to vis, theory/application of multi-variate encodings, Tableau/Excel tutorial), led in-class critique of visualization, and designed mini-lessons for small-group work

Teaching Assistant (Data Visualization)   Jan 2015 – May 2015
University of Wisconsin—Madison, Madison, WI
http://graphics.cs.wisc.edu/WP/vis15

+ Facilitated and evaluated student discussion via the Canvas LMS (nearly 6,000 student posts), critiqued vis prototypes and distributed for peer-review, provided tool support (Tableau tutorial)

Chemistry Tutor   Oct 2010 – Jun 2011
Shorecrest High School, Shoreline, WA

+ Taught core chemistry concepts in small-group and individual settings to high-school students on topics like redox, stoichiometry, ionic charges, and interpreting the periodic table of elements

Teaching Assistant   Jan 2008 – Mar 2009
University of Washington, Seattle, WA

+ *Computer Networks (TA for three quarters)* – Graded assignments; ran bi-weekly discussion sections discussing transmission speed, error correction, routing algorithms, and addressing; assisted students with NAT poking, RFID simulation, and programming on Netgear routers

+ *Operating Systems (TA for one quarter)* – Graded assignments; created first Windows-based homeworks projects for the department (previous incarcerations of the class were in Linux); ran weekly recitation sections discussing RAID, file systems, concurrency, and process scheduling

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Community

Reviewing Experience

+ *Data Visualization*: EuroVis (2016–17), TVCG (2016–2017), InfoVis (2016–17), VAST (2013–14, 2016–17), SciVis (2014, 2016–17), BioVis (2013)
+ *Computer Graphics*: SIGGRAPH (2014)

TGIF, Welcome Weekend co-organizer, UW ACM Student Chapter   Sep 2011 – May 2013
http://sacm.cs.wisc.edu
Co-organized logistics for prospective stduents for the 2013 academic year. Helped coordinate visitation and logistics for 60 prospective graduate students for the 2012 academic year. Organized weekly TGIF graduate-student get-togethers and picked tasty food for consumption by able bodies (2011-2012)

UW – Madison Scratch Club Volunteer   Sep 2012 – Dec 2012
https://sites.google.com/site/uwmadisoncsafterschool/
Helped run sessions and build lesson plans to introduce fourth- and fifth-grade students to Scratch programming and associated concepts (e.g. events, loops, objects) at Van Hise Elementary School

Mass Care Worker, American Red Cross – Disaster Relief   Nov 2009 – Aug 2011
Volunteered computer, logistical, and medical skills in emergency shelters for local apartment fires

Eagle Scout, Boy Scouts of America   Fall 1993 – Summer 2006
Gained extensive leadership experience through the roles of Patrol Leader, SPL (at summer camp), and webmaster. Completed Eagle Scout Project at Little Bit Theraputic Riding Center (Woodinville, WA) and constructed concrete pads for stable on- and off-loading of riders onto horses

Professional Memberships
Institute of Electrical and Electronic Engineers (IEEE student member)

Honors and Awards

IEEE VIS Doctoral Colloquium Fellowship, 2016
IEEE SciVis Best Poster Award (with D. Albers, M. Gleicher), 2013
UW Department of Computer Sciences Summer Research Fellowship Winner, 2012
NSF Graduate Research Fellowship Program, Honorable Mention, 2012
University of Washington, Dean's List, 2005–2009
National Merit Finalist, 2004

Full acceptance into the University of Washington at age 16 through UW Academy for Young Scholars

References

Personal and professional references are available upon request.