Sriram Karthik **Badam**

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Links

karthikbadam.github.io
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Broad Interests

Visualization | Visual Analytics
Human-Computer Interaction
Machine Learning

Specific Interests

Collaborative Visualization
Post-WIMP Interaction
Mixed-Initiative Interaction

Technologies

C | C++ | Java
PHP | Python | NodeJS
JavaScript | React | Angular
HTML5 | CSS3
Hadoop | MongoDB | MySQL

Techniques

Elastic Documents: reading (J10)
VisFer: visual data transfer (J7)
Group Awareness: collab. VA (C8)
TimeFork: visual prediction (C5)
Proxemic Lens: 3D interaction (C6)

Systems

Vistrates: ubiquitous analytics (J11)
PVA: progressive analytics (J6)
PolyChrome: collaborative vis. (C4)
Munin: ubiquitous analytics (J3)
skWiki: collab. sketching (C1)

Education

2014–2019 **Ph.D.** in Computer Science — University of Maryland, College Park, MD, USA
Thesis title: Enabling **collaborative visual analysis** across heterogeneous devices

2012–2014 **M.S.** in Computer Engineering — Purdue University, West Lafayette, IN, USA
Thesis title: Developing digital media platforms for **early design**

2008–2012 **B.Tech.** in Computer Science — Indian Institute of Technology Hyderabad, India
Major project: **Mobile applications** to support rescue and recovery operations in **post-disaster situations** through a novel multi-hop, peer-to-peer synchronization protocol.

Professional Experience

From July 2019 — Apple — Cupertino, CA, USA
Data Scientist
I build custom analytical tools that help understand the usage of Siri and drive data-driven decision making within the Siri organization in Apple. I collaborate with Machine Learning engineers, designers, and writers in Siri in this process.

2014–2019 — HCIL, University of Maryland — College Park, MD, USA
Research Assistant
I focused on creating efficient collaborations between analysts and their devices to understand data visually and make complex decisions.

2017–2019 — College of Information Studies, University of Maryland — College Park, MD, USA
Instructor
I taught undergrad and grad courses—Visual Analytics (in Spring) and Data Visualization (in Fall)—in the College of Information Studies at UMD.

Summer 2018 — Microsoft Research — Redmond, WA, USA
Research Intern
I worked with Dr. Bongshin Lee on a tool for data-driven storytelling across devices.

Summer 2017 — Creative Intelligence Lab, Adobe Research — Seattle, WA, USA
Research Intern
I worked with Dr. Zhicheng (Leo) Liu on responsive visual interfaces that aid document reading.

Summer 2016 — AVIZ research team, INRIA — Saclay, France
Visiting PhD Student
I worked with Dr. Jean-Daniel Fekete on a progressive analytics system for understanding themes discussed on Twitter using natural language processing.

2012–2014 — Purdue University — West Lafayette, IN, USA
Graduate Research Assistant
My research focused on developing a sketching platform for early design, called skWiki to enable design teams efficiently share their ideas in the form of sketches.

Summer 2011 — Hewlett Packard (HP) R&D — Bangalore, India
Undergraduate Intern
I built a performance analysis tool for HP-UX filesystem using a high-performance computing approach.

Publications

Journal Papers (peer-reviewed)

J11 S. K. Badam, A. Mathisen, R. Rädle, C. N. Klokmose, N. Elmqvist. Vistrates: A Component Model for Ubiquitous Analytics. In IEEE Transactions on Visualization and Computer Graphics (Proc. InfoVis), 25(1): 586-596, 2019.

J10 S. K. Badam, Z. Liu, N. Elmqvist. Elastic Documents: Coupling Text and Tables through Contextual Visualizations for Enhanced Document Reading. IEEE Transactions on Visualization and Computer Graphics (Proc. InfoVis), 25(1): 661-671, 2019.

J9 Z. Cui, S. K. Badam, A. Yalcin, N. Elmqvist. DataSite: Proactive Visual Data Exploration with Computation of Insight-based Recommendations. *Information Visualization Journal*, in press, 2019.

J8 Z. Cui, S. Sen, S. K. Badam, N. Elmqvist. VisHive: Supporting Web-based Visualization through Ad-hoc Computational Clusters of Mobile Devices. *Information Visualization Journal*, 2018.

J7 S. K. Badam, N. Elmqvist. Visfer: Camera-Based Visual Data Transfer for Cross-Device Visualization. *Information Visualization Journal*, 2017.

J6 S. K. Badam, N. Elmqvist, J-D. Fekete. Steering the Craft: UI Elements and Visualizations for Supporting Progressive Visual Analytics. *Computer Graphics Forum (Proc. EuroVis)*, 36(3): 491-502, 2017.

J5 S. Chandrasegaran, S. K. Badam, L. Kisselburgh, N. Elmqvist, and K. Ramani. Integrating Visual Analytics Support for Grounded Theory Practice in Qualitative Text Analysis. *Computer Graphics Forum (Proc. EuroVis)*, 36(3): 201-212, 2017.

J4 S. Chandrasegaran, S. K. Badam, L. Kisselburgh, K. Peppler, N. Elmqvist, K. Ramani. VizScribe: A Visual Analytics Approach to Understand Designer Behavior. *International Journal of Human-Computer Studies*, 100, 66–80, 2017.

J3 S. K. Badam, E. R. Fisher, N. Elmqvist. Munin: A Peer-to-Peer Middleware for Ubiquitous Analytics and Visualization Spaces. *IEEE Transactions on Visualization and Computer Graphics*, 21(2): 215-228, 2015.

J2 J. C. Roberts, P. D. Ritsos, S. K. Badam, D. Brodbeck, J. Kennedy, N. Elmqvist. Visualization Beyond the Desktop – The Next Big Thing. *IEEE Computer Graphics and Applications*, 34(6): 26-34, 2014.

J1 E. R. Fisher, S. K. Badam, N. Elmqvist. Designing Peer-to-Peer Distributed User Interfaces: Case Studies on Building Distributed Applications. *International Journal of Human-Computer Studies*, 72(1): 100-110, 2014.

Conference Papers (peer-reviewed)

C9 T. Horak* - S. K. Badam,* N. Elmqvist, R. Dachselt. When David meets Goliath: Combining Smartwatches with a Large Vertical Display for Visual Data Exploration. In *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI)*, 2018. *__Equal contribution from first two authors.__ [25.7% acc. rate] **Received Honorable Mention (Top 4%)**

C8 S. K. Badam, Z. Zeng, E. Wall, A. Endert, N. Elmqvist. Supporting Team-First Visual Analytics through Group Activity Representations. *Graphics Interface*, 2017.

C7 S. Chandrasegaran, S. K. Badam, N. Zhou, Z. Zhao, L. Kisselburgh, K. Peppler, N. Elmqvist, K. Ramani. Merging Sketches for Creative Design Exploration: An Evaluation of Physical and Cognitive Operations. *Graphics Interface*, 2017.

C6 S. K. Badam, F. Amini, N. Elmqvist, P. Irani. Supporting Visual Exploration for Multiple Users in Large Display Environments. In *Proceedings of the IEEE Conference on Visual Analytics Science and Technology (VAST)*, 2016.

C5 S. K. Badam, J. Zhao, S. Sen, N. Elmqvist, D. S. Ebert. TimeFork: Interactive Prediction of Time Series. In *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI)*, pp. 5409-5420, 2016. [23.4% acc. rate]

C4 S. K. Badam, N. Elmqvist. PolyChrome: A Cross-Device Framework for Collaborative Web Visualization. In *Proceedings of the ACM Conference on Interactive Tabletops and Surfaces (ITS)*, pp. 109-118, 2014. [29% acc. rate]

C3 S. Chandrasegaran, S. K. Badam, Z. Zhao, N. Elmqvist, L. Kisselburgh, K. Ramani. Collaborative Sketching with skWiki: A Case Study, In *Proceedings of the ASME IDETC/CIE Conference*, 2014.

C2 S. K. Badam* - S. Chandrasegaran,* N. Elmqvist, K. Ramani. Tracing and Sketching Performance using Blunt-Tipped Styli on Direct-Touch Tablets. In *Proc. of the ACM Conference on Advanced Visual Interfaces (AVI)*, pp. 193–200, 2014. *__Equal contribution from first two authors.__ [28% acc. rate]

C1 Z. Zhao, S. K. Badam, S. Chandrasegaran, D. G. Park, N. Elmqvist, L. Kisselburgh, K. Ramani. skWiki: A Multimedia Sketching System for Collaborative Creativity. In *Proceedings of the ACM Conference on Human Factors in Computing Systems (CHI)*, pp. 1235–1244, 2014. [22.8% acc. rate]

Extended Abstracts (peer-reviewed)

E1 L. Kisselburgh, J. Foote, S. Chandrasegaran, N. Zhou, S. K. Badam, N. Elmqvist, K. Ramani. Wearable sociometric sensors for measuring real-time collaboration. *Extended Abstract to be presented at the International Communication Association*, 2017.

Workshop Papers (juried)

W5 S. K. Badam, R. Rädle, C. N. Klokmose, N. Elmqvist. Towards a Unified Visualization Platform for Ubiquitous Analytics. Workshop paper presented at Data Visualization on Mobile Devices at ACM CHI 2018.

W4 S. K. Badam, A. Srinivasan, N. Elmqvist, J. Stasko. Affordances of Input Modalities for Visual Data Exploration in Immersive Environments. Workshop paper presented at Immersive Analytics: Exploring Future Interaction and Visualization Technologies for Data Analytics at IEEE VIS 2017.

W3 S. K. Badam, C. Kinkeldey, P. Isenberg. Haztrailz: Exploratory Analysis of Trajectory and Sensor Data. Workshop paper presented at VAST Challenge at IEEE VIS 2016.

W2 S. K. Badam, N. Elmqvist. Design Considerations for Mid-Air Interaction with Holographic Projections. Workshop paper presented at Mid-Air Haptics and Displays: Systems for Un-instrumented Mid-Air Interactions at ACM CHI 2016.

W1 S. K. Badam, N. Elmqvist. Projector Display Systems in Visualization. Workshop paper presented at Death of the Desktop: Envisioning Visualization without Desktop Computing at IEEE VIS 2014.

Posters (peer-reviewed)

P3 L. Kisselburgh, N. Zhou, S. Chandrasegaran, S. K. Badam, N. Elmqvist, K.Peppler, K. Ramani. Creative Collaboration and Flow: Validating the Use of Trace Data to Measure Dynamics of Creative Flow in Collaborative Design Teams. Poster presented at International Conference on Computer Supported Collaborative Learning (CSCL), 2015.

P2 N. Zhou, L. Kisselburgh, S. Chandrasegaran, S. K. Badam, N. Elmqvist, K. Peppler, K. Ramani. Using Real-time Trace Data to Predict Collaboration Quality and Creative Fluency in Design Teams. Poster presented at International Conference on Computer Supported Collaborative Learning (CSCL), 2015.

P1 S. K. Badam, J. Zhao, N. Elmqvist, D. S. Ebert. TimeFork: Mixed Initiative Time-Series Prediction. Poster presented at IEEE Conference on Visual Analytics Science and Technology (VAST), 2014.

Technical Reports

R1 S. Sen, S. K. Badam, N. Elmqvist. VisHive: Creating Ad-hoc Computational Clusters using Mobile Devices in Web-based Visualization. *HCIL Technical Report*, 2016.

Contributions to Funded Projects

- **Ubilytics**: Harnessing Existing Device Ecosystems for Anywhere Sensemaking.
  (PI: N. Elmqvist) National Science Foundation.
  Relevant publications: J11, J9, J8, C9, J7, C8, C6, J6, J4, J3, J1, C4, R1.
- **C3DaR**: Collection, Creation, and Collaboration for Engineering Design and Reflection
  (PI: N. Elmqvist) National Science Foundation.
  Relevant publications: J5, J4, C8, C7.
- **V-ICED**: Visually-Integrated Cyber Exploratorium for Design.
  (PI: K. Ramani; Co-PIs: N. Elmqvist, L. Kisselburgh) National Science Foundation.
  Relevant publications: C8, C7, J5, C3, C2, C1, P3, P2.
- Natural Interaction Spaces for Early Engineering Design.
  (PI: N. Elmqvist; Co-PI: K. Ramani) National Science Foundation.
  Relevant publications: C1.

Teaching Experience

- Instructor: INST462 - Introduction to Data Visualization - Spring 2019. An online undergraduate course on designing, building, and evaluating visualizations. This was taken by 73 students in Information Studies at UMD.

- Instructor: INST760 - Data Visualization - Fall 2018. A project-oriented course on the science and technology of visualization offered in Information Studies at UMD taken by 26 graduate students.
- Instructor: INST762 - Visual Analytics - Spring 2018. A practical course on the theory and application of visual analytics in Information Studies at UMD taken by 22 graduate students.
- Instructor: INST760 - Data Visualization - Fall 2017. A project-oriented course on the science and technology of visualization offered in Information Studies at UMD taken by 31 graduate students.
- Instructor: INST728Q - Visual Analytics - Spring 2017. An advanced topics course on the synthesis of visualization and data science in Information Studies at UMD taken by 24 graduate students.
- Instructor: Workshop on Data Visualization at SESYNC - Annapolis, MD, USA - December 2016. I discussed topics on visualization scripting and storytelling.
- Supervisor: Advised Zhe Cui, a junior graduate student in University of Maryland, College Park on computational aids for visual exploration. Relevant publications: J9, J8.
- Supervisor: Advised Shivalik Sen, an intern from BITS Pilani Goa Campus in India, on developing adhoc computational clusters using mobile phones to support big data visualization. Relevant publications: R1.
- Instructor: Freshman C-programming lab (CS101) - Fall 2009. Supervised a group of 10 undergraduate students at Indian Institute of Technology Hyderabad.

Invited Talks

I8 "Introduction to Data Visualization and Tableau," INST 201: Introduction to Information Science, College of Information Studies, University of Maryland, College Park, MD, USA, November 14, 2018.

I7 "**Visualization Beyond the Desktop**," Interactive Data Lab (IDL), University of Washington, Seattle, WA, USA, August 23, 2018.

I6 "On Internships & Research," INST362: User-Centered Design, College of Information Studies, University of Maryland, College Park, MD, USA, October 31, 2017.

I5 "Introduction to Data Visualization," CMSC320: Introduction to Data Science, Department of Computer Science, University of Maryland, College Park, MD, USA, December 07, 2016.

I4 "Supporting **Collaborative Visual Analysis** across Heterogenous Devices," Chalmers University of Technology, Gothenburg, Sweden, November 16, 2016.

I3 "Time-Series Analytics," INST728Q: Visual Analytics, College of Information Studies, University of Maryland, College Park, MD, USA, March 10, 2016.

I2 "Cross-Device Frameworks for **Collaborative Visualization**," HCIL Brown Bag Lunch, College Park, MD, USA, February 5, 2015.

I1 "Multimodal Interaction Design for **Ubiquitous Analytics**," IEEE VIS 2014 Doctoral Colloquium, Paris, France, November 8, 2014.

Awards

- Awarded **Schloss Dagstuhl - NSF Support Grant** for attending the Dagstuhl seminar on Progressive Data Analysis and Visualization in October, 2018.
- Awarded **Outstanding Graduate Assistant (top 2%)** for contributions in both research and teaching at University of Maryland, College Park, MD, USA.
- Awarded **Honorable Mention (top 4%)** for our Large Display + Smartwatch paper at ACM CHI 2018.
- Awarded **Best Use of Existing Tools** and honorable mention for **Clear Analysis Strategy** at IEEE VAST Challenge 2016.
- Awarded Human-Computer Interaction Consortium travel grant for attending HCIC 2015 workshop on HCI theories.
- Awarded travel grant for attending Doctoral Consortium, IEEE VIS (InfoVis 2014), Paris, France.
- Awarded University of Tokyo - Mori Seiki Co. IIT Undergraduate Scholarship for the years 2009-10, 2010-11 (Also known as 'Todai IIT Scholarship').

Service

- Regular Program Committee Member for ACM IUI 2019.
- Student volunteer for HCIL symposium 2015-16, IEEE VIS 2016-17.
- Student reviewer for computer science graduate admissions at University of Maryland, College Park (2016, 2017).
- Reviewer for HCI and information visualization conferences: EuroVis 2019, ACM CHI 2019, ACM IUI 2019, IEEE VAST 2018, IEEE InfoVis 2017, GI 2017, EuroVis 2017, IEEE PacificVis 2017, IEEE VAST 2015-2016, ACM ITS 2015, ACM MobileHCI 2014, and IEEE SciVis 2013.

Press

- UMIACS, April 2018. "HCIL Team Combines Large Display Monitors with Smartwatches for Better Data Analysis."
  Relevant publications: C9.
- UMIACS, May 2016. "UMIACS Researchers Advancing Techniques to Improve the Predictive Capabilities of Big Data."
  Relevant publications: C5.
- NSF Discovery, June 2015. "Tools for real-time visual collaboration: Indiana and Purdue University Professors design cyber-learning system to make sharing ideas easier."
  Relevant publications: C3, C1.
- Huffington Post, June 2015. "7 Cyberlearning technologies transforming education."
  Relevant publications: C3, C1.
- MIT Technology Review, April 10, 2014. "Startup Makes One App Run on Many Screens."
  Relevant publications: C4.