

# Stephen MacNeil

I adopt a mixed-methods approach to understand how designers and students develop conceptual frameworks. I use these insights to build tools that aid the processes of learning and design. Research Keywords: HCI, Education, Visualization, Machine Learning, Design Cognition.

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## Education

- May 2012 **B.S. Electrical and Computer Engineering, Purdue University.**  
Concentration: Circuits, signal processing, and embedded programming
- May 2016 **M.S. Computer Science, University of North Carolina at Charlotte, 3.94/4.**  
Concentration: Visualization and Computer Graphics
- May 2018 **Ph.D. Computer Science, University of North Carolina at Charlotte, 3.95/4.**  
(Expected) Topic: Modeling the design process to provide tools that clarify design decisions.


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## Experience

### RESEARCH


- Summer '16 **University of Tokyo, Advisor: Dr. Koji Yatani.**  
 Employed need-finding analysis to determine how new students engage in the design process. Created a web-based tool that supports these novice designers after their initial ideation phase.  
[ReactJS](#) [Redux](#) [Babel](#) [ES7](#) [ES6](#) [MongoDB](#)
- 2013-2014 **UNC at Charlotte, Advisor: Dr. Jamie Payton.**  
 Led development for NSF BRIDGES. It allows students in a data-structures course to query live, real-world data-sets and have their data-structures visualized.  
[Express](#) [D3](#) [Twitter API](#) [Javascript](#) [MongoDB](#)
- Summer '13 **UNC at Charlotte, Advisor: Dr. Celine Latulipe.**  
 For a Media Computation course, code is compiled, run on a virtual machine, and output images are graded against gold-model images by mean-square error.  
[Wordpress](#) [PHP](#) [MySQL](#)
- 2011-2013 **Purdue University, Advisor: Dr. Niklas Elmqvist.**  
 Visualization Mosaics are composite visualizations created from simpler representations paired with interaction techniques to reduce dimensional complexity. Approach formalized with a grammar for creating mosaics. Published in the CGF [3] and received \$50,000 grant from Google based on preliminary results.


### INDUSTRY

- Summer '09 **Cordis (Johnson & Johnson Pharmaceuticals), Advisor: Dr. Vladimir Veselov.**  
 Java UI for automated validation form generation via Oracle/Maximo database.  
[Java](#) [Oracle](#) [Ant](#) [XML](#) [HSSF](#) [XSSF](#) [VSS](#)

Summer '08 **Johnson and Johnson Pharmaceuticals, Raritan, NJ.**  
Web / Wiki Development [CSS](#) [Javascript](#) [Confluence](#) [Cold Fusion](#)  
 Data Mining and Server Migration [Toad](#) [SQL](#) [Pipeline Pilot](#)  
Application Tracking [Pipeline Pilot](#) [Excel](#) [HTML](#) [SQL](#)

### OPEN SOURCE

2013-present **pagerank-js: a javascript library for ranking nodes in a directed graph.**  
 <https://www.npmjs.com/package/pagerank-js>  
**Source Code:** <http://github.com/pagerank>

2013-present **kmeansjs: a javascript library for k-means clustering.**  
 <https://www.npmjs.com/package/kmeansjs>  
**Source Code:** <http://github.com/kmeans>

### TEACHING

- Fall '16 **Data Structures and Algorithms, ITCS 2214, UNC at Charlotte.**  
ASSISTANT LAB INSTRUCTOR - 87 STUDENTS  
[search](#) [sorting](#) [algorithm complexity](#) [hashing](#) [graph theory](#) [media computation](#)
- Spring '16 **STARS Service and Leadership Course, ITCS 1610/3610, UNC at Charlotte.**  
INSTRUCTOR OF RECORD - 12 STUDENTS  
Flipped classroom style course modeled as a startup incubator  
[leadership](#) [management](#) [psychology](#) [service learning](#) [agile methodology](#)
- Spring '13 **Introduction to Programming II Lab, ITCS 1213, UNC at Charlotte.**  
UNSUPERVISED LAB INSTRUCTOR - 3 SECTIONS OF 20-25 STUDENTS  
Reinforced concepts taught in class, led the lab section, and graded assignments.  
[object-oriented paradigm](#) [polymorphism](#) [inheritance](#) [abstraction](#) [java](#)
- Fall '12 **Computer Organization and Architecture Lab, ITCS 3182, UNC at Charlotte.**  
UNSUPERVISED LAB INSTRUCTOR - 60 STUDENTS  
Reinforced concepts taught in class, led the lab section, and graded assignments  
[switches](#) [ALUs](#) [registers](#) [buses](#) [MIPS ISA](#) [memory](#) [functional parallelism](#)

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## Publications

### PAPERS

- [1] **Stephen MacNeil**, Celine Latulipe, and Aman Yadav. Learning in distributed low-stakes teams. In *Proceedings of the Eleventh Annual International Conference on International Computing Education Research*, ICER '15, pages 227–236, New York, NY, USA, 2015. ACM. [26% acceptance rate].
- [2] **Stephen MacNeil**, Celine Latulipe, Bruce Long, and Aman Yadav. Exploring lightweight teams in a distributed learning environment. In *Proceedings of the 47th ACM Technical Symposium on Computing Science Education*, SIGCSE '16, pages 193–198, New York, NY, USA, 2016. ACM. [35% acceptance rate].
- [3] **Stephen MacNeil** and Niklas Elmqvist. Visualization mosaics for multivariate visual exploration. *Computer Graphics Forum*, 32(6):38–50, September 2013.

### POSTERS / OTHER PUBLICATIONS

- [4] **Stephen MacNeil** and Celine Latulipe. Leveraging context to create opportunistic co-located learning environments. In *Proceedings of the 47th ACM technical symposium on Computer science education (SIGCSE '16)*. ACM, 2016.

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## Computer skills

web	React, Redux, ES6, ES7	database	MongoDB, MySQL
graphics	D3, OpenGL, Tableau	backend	Express, Sails, Nodejs
statistics	R, Matlab	embedded	MIPS, VHDL, C
languages	Clojure, Javascript, Python	specialty	multi-paradigm programming

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## Talks

August 2015	<b>ICER</b> Learning in Distributed Low-Stakes Teams	Omaha, Nebraska
March 2016	<b>SIGCSE</b> Distributed Low-Stakes Teams in the Wild	Memphis, Tennessee

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## Academic Honors

2014-2016	<b>GAANN Fellowship</b>	UNC at Charlotte
Spring 2014	<b>Phi Kappa Phi Honorary Society</b> Member	UNC at Charlotte
Fall 2014	<b>3rd Place</b> CCI Flash Talk Competition	UNC at Charlotte
2012-2015	<b>GASP Award</b> Graduate Assistant Support Plan	UNC at Charlotte

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## Service

2016-Present	<b>Executive Officer</b> STARS	UNC at Charlotte
2015-Present	<b>Web &amp; Social Media Chair</b> UNCC HCI Lab	UNC at Charlotte
2014-2015	<b>Web &amp; Social Media Chair</b> UIST 2015	
2014-2015	<b>Founder</b> Learning Sciences Reading Group	UNC at Charlotte
2008	<b>President</b> Sigma Pi Fraternity	Purdue University

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## Volunteer

Apr 24, 2016	<b>Table Organizer</b> NC Science and Technology Expo	UNC at Charlotte
Mar 19, 2016	<b>Table Organizer</b> Julia Robinson Math and Science Festival	UNC at Charlotte
Dec 2, 2015	<b>Co-organizer</b> CEI Workshop: "Learning in Lightweight Teams"	UNC at Charlotte

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## Research Mentorship: Students Supervised

Summer '15 **Kyla Bouldin**, *The Ohio State University*.

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## References

### ACADEMIC

- Dr. Celine Latulipe, UNC at Charlotte.
- Dr. Jamie Payton, UNC at Charlotte.
- Dr. Mary Lou Maher, UNC at Charlotte.
- Dr. Niklas Elmqvist, University of Maryland iSchool.

### INDUSTRY

- Dr. Vladimir Veselov, Amazon - Loebner Medal (2012 Turing Test)
- Keith McCormick, Johnson & Johnson