

Gursimran Singh Walia
Associate Professor of Computer Science
QBB 258 A17; Department of Computer Science
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Professional Preparation

- 2009. Ph.D. Computer Science, Mississippi State University, Starkville, MS
- 2009. Information Assurance Professional, Mississippi State University, Starkville, MS
- 2007. M.S. Computer Science, Mississippi State University, Starkville, MS
- 2004. B.Tech. Computer Science, Punjab, INDIA

Appointments

- 2015 - present. Associate Professor - Department of Computer Science. North Dakota State University - Fargo, ND
- 2009 – 2015. Assistant Professor – Department of Computer Science. North Dakota State University – Fargo, ND
- 2004 – 2009. Graduate Researcher – Department of Computer Science and Engineering. Mississippi State University – Starkville, MS

Research Interests

Empirical software engineering, Software errors; Software inspections and Software quality improvement, Requirements engineering, Human Cognition in Software Engineering, Managing and estimating software quality, Information Assurance, Software Engineering for computer security.

Awards and Honors

- **Best Research Paper Award** for the paper, Goswami, A., Walia, G. "An Empirical Study of the Effect of Learning Styles on the Faults found During the Software Inspection" Proceedings of the 24th IEEE International Symposium on Software Reliability Engineering - ISSRE'2013, Research Track. Pasadena, CA, USA.
- **Best Industry Paper Award** for the paper, Walia, G., Carver, J. "Using Capture-Recapture Models for Make Objective Post-Inspection Decisions" Proceedings of the 24th IEEE International Symposium on Software Reliability Engineering - ISSRE'2013, Industry Track. Pasadena, CA, USA.
- **Excellence in Teaching Award**, College of Science and Mathematics, NDSU, 2015
- Nominated for the NDSU Development Foundation **Peltier Award for Teaching Innovation**, 2015.
- Nominated for the NDSU Development Foundation **Odney Excellence in Teaching Award**, 2015-2016.

Research Funding

- NSF DUE-1225972; **PI: Walia (\$600,000)**; Effective Dates (8/15/2012 – 7/31/2015); *Type 2 Collaborative Project: Integrating Testing into Advanced CS/IT Courses Supported by a Cyber Learning Environment.*
- NSF CCF- 1423279; **PI: Walia (\$180,242)**; Effective Dates (8/1/2014 – 7/31/2017); *Integrating Software Engineering and Human Error Models to Improve Software Quality*
- NSF DUE - 1525414; **PI: Walia (\$179,891)**; Effective Dates (8/1/2015 - 7/31/2019); *Engaged Student Learning - Design and Development Level II: Using a Cyberlearning Environment to Improve Student Learning and Engagement in Software Courses*
- NSF CBET - 1401507; **Consultant: Walia**; Effective Dates (07/15/2014 - 06/30/2019); *GARDE: Design Projects to Enable Veteran Reintegration in an Educational System*

Publications (* - Graduate Students) Reverse Chronological Order

Refereed Journal Articles

- Goswami, A.*, **Walia, G.**, and Singh, A. "Using Learning Styles of Software Professionals to Improve their Inspection Team Performance," International Journal of Software Engineering and Knowledge Engineering. 2015. (**Accepted**)
- Lacher, L., **Walia, G.**, Fagerholm, F., Pagels, M., Nygard, E. K., Münch, J. "A Behavior Marker tool for measurement of the Non-Technical Skills of Software Professionals: An Empirical Investigation," International Journal of Software Engineering and Knowledge Engineering. 2015. (**Accepted**)
- Radermacher, A.*, **Walia, G.**, and Knudson, K. "Missed Expectations: Where CS Students Fall Short in the Software Industry," Accepted to Appear in the Special Issue (entitled 'Software Education Today') of 'CrossTalk – The Journal of Defense Software Engineers, January 2015.
- Roudaki, A.*, Kong, J., **Walia, G.**, and Zheng, H. "A Framework for Bimanual Inter-Device Interaction," Accepted to appear in the December 2014 Special Issue of Journal of Visual Languages and Computing (JVLC), December 2014
- Roudaki, A.*, Kong, J., **Walia, G.**, and Roudaki, A.* "PhoneLens: A Low-Cost Spatially Aware, Mobile Interaction Device", IEEE Transactions on Human-Machine Systems, Volume 44, Issue 3, June 2014, Pages 301-314
- Aceituna, D.*, **Walia, G.**, Do, H., and Lee, Seok-Won. "Model-Based Requirements Verification Method: Conclusions from Two Controlled Experiments, Information and Software Technology Journal (JIST), Vol. 56, Issue 3, March 2014, Pages 321-344
- **Walia, G.**, and Carver, J. "Using Error Abstraction and Classification to Improve the Quality of Requirements: Conclusions from Family of Studies," International Journal of Empirical Software Engineering (ESE), Volume 18, Issue 4, Pages 625-658, August 2013
- Potala, Y.*, Annadi, R.*, Kong, J., **Walia, G.**, and Nygard, K. "Adapting Web Page Tables on Mobile Devices," International Journal of Handheld Computing Research (IJHCR), Volume 3, Issue 1, Pages 1-22, January 2012
- **Walia, G.**, and Carver, J. "A Systematic Literature Review to identify and classify Software Requirement Errors" Information and Software Technology (JIST), Vol. 51, Issue 7, Pages 1087-1109, July 2009

Refereed Conference Articles

- Clarke, P., Davis, D., Fu, Y., Kiper, J., **Walia, G.** "*Integrating Testing into CS/IT Courses Supported by a Cyberlearning Environment*," Envisioning the Future of Undergraduate STEM Education: Research and Practice, Washington, DC, 2016. **(Accepted, Dec 09, 2015)**
- Goswami, A. *, **Walia, G.**, and Singh, A. "*Using Learning Styles of Software Professionals to Improve their Inspection Team Performance*," Proceedings of the 27th International Conference on Software Engineering and Knowledge Engineering. July 6- 8, SEKE 2015 Pittsburgh, USA. p. 680-685. **[Acceptance Rate = 29%]**
- Lacher, L., **Walia, G.**, Fagerholm, F., Pagels, M., Nygard, E. K., Münch, J. "*A Behavior Marker tool for measurement of the Non-Technical Skills of Software Professionals: An Empirical Investigation*," Proceedings of the 27th International Conference on Software Engineering and Knowledge Engineering. July 6-8, SEKE 2015, Pittsburg, USA. p. 409-414. **[Acceptance Rate = 29%]**
- Carver, J., **Walia, G.**, and Bradshaw, G. "*First International Workshop on Applications of Human Error Research to Improve Software Engineering (WAHESE 2015)*" The 37th International Conference on Software Engineering, ICSE 2015, Florence Italy. May 23, 2015 <http://humanerrorinse.org/workshops/WAHESE15/index.htm>
- Roudaki, A. *, Kong, J., and **Walia, G.** "A Framework for Bimanual Inter-Device", DMS 2014, pp. 113-120, Pittsburg, PA, USA. 2014 **[Acceptance Rate = 39%]**
- Sharma, S. *, **Walia, G.** and Magel, K. "*Does Domain Knowledge Increase Creativity during Requirements Development: An Empirical Study*," Proceedings of 2014 International Conference on Software Engineering Research and Practice. July 21-24, SERP 2014 USA. **[Acceptance Rate = 28%]**
- Khosla, S. *, Bender, L., **Walia, G.**, and Nygard, K. "*Female Factor and Team Projects - A Social Sensitivity Perspective*" Proceedings of 2014 International Conference on Software Engineering Research and Practice. July 21- 24, SERP 2014 USA. **[Acceptance Rate = 28%]**
- Goswami, A. *, **Walia, G.**, and Abufardeh, S. "*Using a Web-Based Testing Tool Repository in Programming Course: An Empirical Study*" Proceedings of 2014 International Conference on Frontiers in Education: Computer Science and Computer Engineering. July 21- 24, FECS 2014 USA. **[Acceptance Rate = 27%]**
- Radermacher, A. *, **Walia, G.**, Abufardeh, S., and Myronovych, O. "*Guidelines for Implementing Pair Programming in Introductory CS Courses: Experience Report*" Proceedings of 2014 International Conference on Frontiers in Education: Computer Science and Computer Engineering. July 21- 24, FECS 2014 USA. **[Acceptance Rate = 27%]**
- Bender, L. *, **Walia, G.**, Fagerholm, F., Pagels, M., and Nygard, K. "*Measurement of the Non-Technical Skills of Software Professionals: An Empirical Investigation*" Proceedings of the 26th IEEE International Conference on Software Engineering and Knowledge Engineering. July 1- 3, SEKE 2014 Vancouver, Canada. **[Acceptance Rate = 29.6%]**
- Goswami, A. *, **Walia, G.** "Improving the Cost Effectiveness of Software Inspection Teams: An Empirical Investigation" Proceedings of the 26th IEEE International Conference on Software Engineering and Knowledge Engineering. July 1- 3, SEKE 2014 Vancouver, Canada. **[Acceptance Rate = 29.6%]**
- Hegde, R. *, **Walia, G.** "How to Enhance the Creativity of Software Developers: A Systematic Literature Review" Proceedings of the 26th IEEE International Conference on Software Engineering and Knowledge Engineering. July 1- 3, SEKE 2014 Vancouver, Canada. **[Acceptance Rate = 29.6%]**
- Gupta, M. *, Aceituna, D. *, **Walia, G.**, Do, H. "Evaluating the Use of Model-Based Requirement Verification Method: An Empirical Study" Proceedings of the 26th IEEE International Conference on

Software Engineering and Knowledge Engineering. July 1-3, SEKE 2014 Vancouver, Canada. **[Acceptance Rate = 29.6%]**

- Radermacher, A.*, **Walia, G.**, Knudson, D. "Investigating the Skill Gap Between Graduating Students and Industry Expectations", Proceedings of the 36th ACM International Conference on Software Engineering: Software Engineering Education and Training (SEET) Track, May 31 - June 7, ICSE 2014 Hyderabad, India. **[Acceptance Rate = 16% (9/54)]**
- Clarke, P., Fu, Yujian., Kiper, J., **Walia, G.** "Workshop: Integrating Software Testing into Programming Courses" WISTPC 2014, Proceedings of the 45th ACM Technical on Computer Science Education - SIGCSE'2014. Atlanta, GA, USA.
- **Walia, G.**, Carver, J. "Using Capture-Recapture Models for Make Objective Post-Inspection Decisions" Proceedings of the 24th IEEE International Symposium on Software Reliability Engineering - ISSRE'2013, Industry Track. Pasadena, CA, USA. **[Acceptance Rate = 35% (46/131)] Best Industry Paper Award**
- **Walia, G.**, Carver, J. "Using Error Information to Improve Software Quality" Proceedings of the 24th IEEE International Symposium on Software Reliability Engineering - ISSRE'2013, Industry Track. Pasadena, CA, USA. **[Acceptance Rate = 35% (46/131)]**
- Goswami, A.*, **Walia, G.** "An Empirical Study of the Effect of Learning Styles on the Faults found During the Software Inspection" Proceedings of the 24th IEEE International Symposium on Software Reliability Engineering - ISSRE'2013, Research Track. Pasadena, CA, USA. **[Acceptance Rate = 35% (46/131)] Best Research Paper Award**
- Radermacher, A.*, **Walia, G.** "Gaps between Industry Expectations and the Abilities of Graduates: Systematic Literature Review Findings" Proceedings of the 44th ACM Technical Symposium on on Computer Science Educational - SIGCSE'2013: The Changing Face of Computing. March 6 - 9, 2013 Denver, Colorado, USA. **[Acceptance Rate = 37.8% (111/293)]**
- Radermacher, A.*, **Walia, G.** "Improving Student Learning Outcomes with Pair Programming" Proceedings of the 8th ACM International Conference on Computing Educational Research. September 10-12, ICER 2012 Auckland, New Zealand. pp. 87-92 **[Acceptance Rate = 39% (21/53)]**
- Bender, L.*, **Walia, G.**, Kambhampaty, K.*, Nygard, K. E., and Nygard, T. E. "Social Sensitivity Correlations with the Effectiveness of Team Process Performance: An Empirical Study" Proceedings of the 8th ACM International Conference on Computing Educational Research. September 10-12, ICER 2012 Auckland, New Zealand. pp. 39-46 **[Acceptance Rate = 39% (21/53)]**
- Mandala, N.*, **Walia, G.**, Carver, J. and Nagappan, N. "Application of Kusumoto Cost-Metric to Evaluate the Cost Effectiveness of Software Inspections" Proceedings of the 6th ACM-IEEE International Symposium on Empirical Software Engineering. Sep 19-20, ESEM 2012. Lund University, Sweden. pp. 221-230 **[Acceptance Rate = 25% (24/95)]**
- Mandala, N.*, **Walia, G.** "Evaluating the Cost-Effectiveness of Inspecting the Requirement Documents: An Empirical Study," Proceedings of the 24th International Conference on Software Engineering and Knowledge Engineering. July 1 - July 3, SEKE 2012 Redwood City, San Francisco Bay, USA. pp. 45-50 **[Acceptance Rate = 33%]**
- Bender, L.*, **Walia, G.**, Kambhampaty, K.*, Nygard, K. E., and Nygard, T. E. "Strategies for Teaching Ideation and Ethics in Computer Science Classroom" Proceedings of the 8th International Conference on Frontiers in Education: Computer Science and Computer Engineering. July 16-19, FECS 2012 Nevada, USA. **[Acceptance Rate = 29%]**
- Radermacher, A.*, **Walia, G.** and Rummelt, R., "Assigning Student Programming Pairs Based on Their Mental Model," Proceedings of the 43rd ACM Technical Symposium on Computer Science Education. February 29 – March 3, SIGCSE 2012: Teaching, Learning, and Collaborating. Raleigh, North Carolina, USA. **[Acceptance Rate = 34.6% (100/289)]**

- Bender, L. *, **Walia, G.**, Kambhampaty, K. *, Nygard, K. E., and Nygard, T. E. "Social Sensitivity and Classroom Team Projects: An Empirical Investigation," Proceedings of the 43rd ACM Technical Symposium on Computer Science Education. February 29 – March 3, SIGCSE 2012: Teaching, Learning, and Collaborating. Raleigh, North Carolina, USA. **[Acceptance Rate = 34.6% (100/289)]**
- Aceituna, D. *, Do, H., **Walia, G.**, and Lee, Seok-Won. "Evaluating the Use of Model-Based Requirements Verification Method: A Feasibility Study" IEEE International Workshop on Empirical Requirements Engineering. August 30, Empire 2011 Trento, Italy. pp. 13-20. **[Acceptance Rate = 30%(9/30)]**
- Nygard, K. E., Bender, L. *, **Walia, G.**, Kong, J., Gagneja, K., and LeNoue, M. "Collaboration Using Social Networks for Team Projects" Proceedings of the 7th International Conference on Frontiers in Education: Computer Science and Computer Engineering. July 18-21, FECS' 2011 Nevada, USA. **[Acceptance Rate = 23%]**
- Radermacher, A. *, **Walia, G.** "Investigating Student-Instructor Interactions When Using Pair Programming: An Empirical Study," Proceedings of the 24th IEEE-CS Conference on Software Engineering Education and Training. May 22-24, CSEE&T 2011 Waikiki, Honolulu, Hawaii. pp. 41-50. **[Acceptance Rate = 30%]**
- Radermacher, A. *, **Walia, G.** "Investigating the Effective Implementation of Pair Programming: An Empirical Investigation," Proceedings of the 42nd ACM Technical Symposium on Computer Science Education. March 9-12, SIGCSE 2011 Dallas, Texas, USA. pp. 655-660. **[Acceptance Rate = 34% (107/315)]**
- **Walia, G.**, Carver, J. "Evaluate the Use of Requirement Error Abstraction and Classification Method for Preventing Errors During Artifact Creation: A Feasibility Study." Proceedings of the 21st IEEE International Symposium on Software Reliability Engineering. November 1-4, ISSRE 2010. San Jose, California, USA. pp. 81-90. **[Acceptance Rate =31% (40/130)]**
- **Walia, G.**, and Carver, J. "Evaluating the Effect of the Number of Naturally Occurring Faults on the Estimates Produced by Capture-Recapture Models," Proceedings of the 2nd IEEE International Conference on Software Testing, Verification, and Validation. April 1-4, ICST 2009. Denver, CO, USA. pp. 210-219. **[Acceptance Rate = 23%]**
- **Walia, G.**, and Carver, J. "STUDENT PAPER: The Effect of the Number of Defects on Estimates Produced by Capture-Recapture Models," Proceedings of the 19th IEEE International Symposium on Software Reliability Engineering. November 10-14, ISSRE 2008. Seattle, WA, USA. p. 305-306. **[Acceptance Rate = 30%]**
- **Walia, G.**, and Carver, J. "Evaluation of Capture-Recapture Models for Estimating the Abundance of Naturally Occurring Defects." Proceedings of the 2nd ACM-IEEE International Symposium of Empirical Software Engineering and Measurement. October 9-10, ESEM 2008. Kaiserslautern, Germany. pp. 158-167. **[Acceptance Rate = 28% (28/100)]**
- **Walia, G.**, Carver, J. and Nagappan, N. "The Effect of the Number of Inspectors on the Defect Estimates Produced by Capture-Recapture Models." Proceedings of the 30th ACM/IEEE International Conference on Software Engineering. May 10-18, ICSE 2008. Leipzig, Germany. p. 331-340. **[Acceptance Rate = 15% (56/371)]**
- **Walia, G.**, Carver, J. and Philip, T. "Requirement Error Abstraction and Classification: A Control Group Replicated Study." Proceedings of the 18th IEEE International Symposium on Software Reliability Engineering., November 5-9, ISSRE 2007. Trollhättan, Sweden. pp. 71-80. **[Acceptance Rate = 30%]**
- **Walia, G.**, and Carver, J. "Requirements Error Abstraction and Classification: An Empirical Study." Proceedings of the 2006 International Symposium on Empirical Software Engineering. Sept. 21-22, ISESE 2006. Rio de Janeiro, Brazil. pp. 336-345. **[Acceptance Rate = 46% (40/87)]**

Teaching

- Software Requirements Definition and Analysis (**CSCI 715**)- Fall 2013, Fall 2014, Fall 2015
- Software Complexity Metrics (**CSCI 847**)– Fall 2013, Fall 2014
- Theoretical Computer Science II (**CSCI 336**)– Spring 2013, Spring 2014, Spring 2015
- Software Project Planning and Estimation (**CSCI 714**)- Spring 2011, Summer 2013, Summer 2014, Spring 2014, Fall 2014, Fall 2015
- Empirical Methods in Software Engineering (**CSCI 848**)- Spring 2010, Spring 2011, Fall 2011, Fall 2013, Fall 2015
- System Analysis and Design using UML(**CSCI 315**)- Fall 2009, Fall 2010, Fall 2011, Fall 2013, Fall 2014
- Graduate Seminar – Empirical Software Engineering (**CSCI 790**)– Fall 2010 and Fall 2011

Synergistic Activities

- **National Science Foundation** (NSF) Review Panelist (2009 and 2011); NSF – Graduate Research Fellowship Proposals (GRFP);
- Computing Reviews
- **Journals Reviewed:** Software Quality Journal (SQJ), Information Science Journal (ISJ), Annals of Nuclear Energy, International Journal of Empirical Software Engineering (EMSE), Journal of Information and Software Technology (JIST); International Journal of Library and Information Science (IJLIS); Transactions on Computing Education (TOCE);
- **Conferences Reviewed:** International Symposium on Empirical Software Engineering and Measurement (ESEM), International Conference on Software Engineering and Knowledge (SEKE), International Conference on Software Testing, Verification, and Validation (ICST), ACM Symposium on Computer Science Education (SIGCSE), ASEE Computers in Education Division, Innovation and Technology in Computer Science Education (ITICSE), Software Engineering Education and Training (CSEE&T); International Symposium on High Assurance Systems Engineering (HASE), International Conference on Advances and Trends in Software Engineering;
- **Program Committee Member:** International Symposium on High Assurance Systems Engineering (HASE – 2013, 2014, 2015, 2016), International Conference on Software Engineering and Knowledge (SEKE – 2012, 2013, 2014, 2015, 2016), World Congress on Computing and Communication Technologies (WCCCT), International Symposium on Empirical Software Engineering and Measurement (ESEM – 2013, 2014, 2015, 2016), ACM Symposium on Computer Science Education (SIGCSE – 2012, 2013, 2014, 2015, 2016); International Conference on IT Convergence and Security;
- **Key note speaker** - World Congress on Computing and Communication Technologies (WCCCT)
- **Workshop Organizer:** Co-organized the Third Workshop on Integrating Software Testing into Programming Courses (WISTPC 2013); First International Workshop on Applications of Human Error Research to Improve Software Engineering (WAHESE 2015); Workshop on Integrating Software Testing into Programming Courses (WISTPC-14-1); Workshop on Integrating Software Testing into Programming Courses(WISTPC-14-2); Workshop on Integrating Software Testing into Programming Courses (WISTPC-15);
- **Affiliations:** IEEE Member, International Software Engineering Research Network (ISERN), Advisory Board on NSF Collaborative Project to Integrate Testing into Advanced CS/IT Courses Supported by a Cyber learning Environment, Empirical Software Engineering and Social Sensitivity Research Group at NDSU, Software Quality Journal

Graduate Students

- Anurag Goswami; **PhD (~2016)**
- Vaibhav Kumar Anu; **PhD (~2017)**
- Tushar Aggarwal; **PhD (~2018)**
- Alex Radermacher; **PhD (~2018)**
- Avijeet Tomar; **PhD (~2018)**
- Abhinav Singh; **MS (~2016)**
- Ashish Singh; **MS (~2016)**
- Zhou Lu; **MS (~2016)**
- Shishir Hegde; **MS (~2016)**
- Keith Stephan Abeyratne; **MS - 08/25/2014**
- Nilukshi Fonseka; **MS - 05/16/2014**
- Sourabh Khosla; **MS - 05/04/2014**
- Sana Rehman; **MS - 04/10/2014**
- Sonu Sharma; **MS - 04/03/2014**
- Munmun Gupta; **MS - 02/21/2014**
- Lisa L. (Bender) Lacher; **PhD - 12/19/2013**
- Reshma Hegde; **MS - 07/30/2013**
- Avijeet Tomar; **MS - 01/25/2013**
- Haribabu Bavanari; **MS - 10/26/2012**
- Alex Radermacher; **MS - 04/03/2012**
- Narendar Mandala; **MS - 03/12/2012**
- Kaustubh Saxena; **MS - 01/30/2012**
- Pradeep Amaran; **MS - 04/06/2011**