

# Bob Edmison

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## Education

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- 2007 – 2019    ♦ **Ph.D. in Computer Science and Applications, Virginia Polytechnic Institute and State University, Blacksburg, VA USA.**  
Dissertation title: *Turning Up the Heat!: Using Fault-Localizing Heat Maps to Help Students Improve Their Code.*  
Advisor: Stephen H. Edwards
- 2003 – 2006    ♦ **M.IT. Information Technology, Virginia Polytechnic Institute and State University, Blacksburg, VA USA.**
- 1992 – 1995    ♦ **M.A.Ed., Virginia Polytechnic Institute and State University, Blacksburg, VA USA.**  
Major: Education, Curriculum and Instruction.  
Concentration: *Instructional Systems Design.*
- 1988 – 1992    ♦ **B.A., Virginia Polytechnic Institute and State University, Blacksburg, VA USA.**  
Majors: *Economics and Political Science*

## Employment History

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- 2020 – present    ♦ **Collegiate Assistant Professor** Department of Computer Science, College of Engineering, Virginia Tech, Blacksburg, VA, USA.  
Also, Coordinator for Online Teaching and Learning
- 2014 – 2020    ♦ **Director of Software Development** Technology-enhanced Learning and Online Strategies, Division of Information Technology, Virginia Tech, Blacksburg, VA, USA.
- 2016 – 2020    ♦ **Adjunct Instructor.** Department of Computer Science, College of Engineering, Virginia Tech, Blacksburg, VA, USA.)
- 2008 – 2016    ♦ **Adjunct Instructor.** Grado Department of Industrial and Systems Engineering, College of Engineering, Virginia Tech, Blacksburg, VA, USA.
- 2004 – 2014    ♦ **Senior Research Associate.** Software Technologies Laboratory, Grado Department of Industrial and Systems Engineering, College of Engineering, Virginia Tech, Blacksburg, VA, USA.
- 2001 – 2003    ♦ **Research Associate.** Software Technologies Laboratory, Grado Department of Industrial and Systems Engineering, College of Engineering, Virginia Tech, Blacksburg, VA, USA.
- 1999 – 2001    ♦ **Web Software Engineer.** Interactive Design and Development, Blacksburg, VA, USA.
- 1997 – 1999    ♦ **Web Software Engineer.** VTLS, Inc, Blacksburg, VA, USA.
- 1995 – 1997    ♦ **Systems Engineer.** Electronic Data Systems, Inc, Herndon, VA, USA.

## Research Publications


### Conference Proceedings

- 1 **Edmison, B.**, Edwards, S. H., Babb, L., Ellis, M., Mayfield, C., Jung, Y. & Honts, M. (2023). Toward a new state-level framework for sharing computer science content. In *Proceedings of the 54th acm technical symposium on computer science education v. 1* (pp. 59–65). SIGCSE 2023. doi:10.1145/3545945.3569808
- 2 Blanchard, J., Hott, J. R., Berry, V., Carroll, R., **Edmison, B.**, Glassey, R., ... Russell, S. (2022). Stop reinventing the wheel! promoting community software in computing education. In *Proceedings of the 2022 working group reports on innovation and technology in computer science education* (pp. 261–292). ITiCSE-WGR '22. doi:10.1145/3571785.3574129
- 3 **Edmison, B.**, Bart, A. C. & Edwards, S. H. (2021). A proposed workflow for version-controlled assignment management. In *Proceedings of the seventh splice workshop: Cs education infrastructure for all iii: From ideas to practice education*. SPLICE '21.
- 4 Hassan, T., **Edmison, B.**, Stelter, T. & McCrickard, D. S. (2021). Learning to trust: Understanding editorial authority and trust in recommender systems for education. In *Proceedings of the 29th acm conference on user modeling, adaptation and personalization* (pp. 24–32). UMAP '21. doi:10.1145/3450613.3456811
- 5 **Edmison, B.** & Edwards, S. H. (2020). Turn up the heat!: Using heat maps to visualize suspicious code to help students successfully complete programming problems faster. In *2020 IEEE International Conference on Software Engineering: Software Engineering Education and Training (ICSE-SEET'20)* (pp. 93–99). doi:10.1145/3377814.3381707
- 6 Hassan, T., **Edmison, B.**, Cox, L., Louvet, M., Williams, D. & McCrickard, D. S. (2020). Depth of Use: An Empirical Framework to Help Faculty Gauge the Relative Impact of Learning Management System Tools. In *Proceedings of the 2020 ACM Conference on Innovation and Technology in Computer Science Education* (pp. 47–53). ITiCSE '20. doi:10.1145/3341525.3387375
- 7 **Edmison, B.** & Edwards, S. H. (2019). Experiences Using Heat Maps to Help Students Find Their Bugs: Problems and Solutions. In *Proceedings of the 50th ACM Technical Symposium on Computer Science Education* (pp. 260–266). doi:10.1145/3287324.3287474
- 8 Bart, A. C., Hilton, M., **Edmison, B.** & Conrad, P. (2019). The problem of packaging curricular materials. In *Proceedings of the 50th acm technical symposium on computer science education* (p. 1246). SIGCSE '19. doi:10.1145/3287324.3293732
- 9 Hassan, T., **Edmison, B.**, Cox, L., Louvet, M. & Williams, D. (2019). Exploring the context of course rankings on online academic forums. In *Proceedings of the 2019 IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining* (pp. 553–556). ASONAM '19. doi:10.1145/3341161.3342954
- 10 **Edmison, B.**, Edwards, S. H. & Pérez-Quñones, M. A. (2017). Using Spectrum-Based Fault Location and Heatmaps to Express Debugging Suggestions to Student Programmers. In *Proceedings of the Nineteenth Australasian Computing Education Conference* (pp. 48–54). ACE '17. doi:10.1145/3013499.3013509
- 11 **Edmison, B.** & Edwards, S. H. (2015). Applying spectrum-based fault localization to generate debugging suggestions for student programmers. In *2015 IEEE International Symposium on Software Reliability Engineering Workshops (ISSREW)* (pp. 93–99). doi:10.1109/ISSREW.2015.7392052
- 12 **Edmison, B.**, Edwards, S. H. & Pérez-Quñones, M. A. (2010). Using a Rubric-based assessment system to improve feedback and student performance in course- management systems. In *Proceedings of 2010 ASEE Southeast Section Conference*, ASEE.

## Book Chapters

- 1 Williams, D., Cox, L., Ellis, M., **Edmison, B.**, Hassan, T., Aaron Bond, M., ... Haqq, D. (2022). Data-informed learning design in a computer science course. In M. J. Spector, B. B. Lockee & M. D. Childress (Eds.), *Learning, design, and technology: An international compendium of theory, research, practice, and policy* (pp. 1–23). doi:10.1007/978-3-319-17727-4\_176-1

## Dissertation

- 1 Edmison, K. R., Jr. (2019). *Turning up the heat!: Using fault-localizing heat maps to help students improve their code*. Virginia Polytechnic Institute and State University, Blacksburg, VA.   
<https://vtechworks.lib.vt.edu/handle/10919/96008>

## Invited talks

- 1 Edmison, Bob. (2022). Instcon'22: Let's build a bridge: Developing a bridge course to graduate school.  
URL: <https://www.instructure.com/canvas/resources/instructurecon-2022/lets-build-a-bridge-developing-a-bridge-course-to-graduate-school>.
- 2 Edmison, Bob. (2021). Canvascon va '21: Panel discussion: Keeping students engaged through change.  
URL: <https://events.bizzabo.com/305968/agenda/session/534496>.
- 3 Edmison, Bob. (2020). Instructure con 2020: Find out how your instructors are \*really\* using canvas: We can show you! URL: <https://events.bizzabo.com/224620/agenda/session/271843>.

## Courses Taught

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Computer Science	<ul style="list-style-type: none"><li>◇ <b>CS 1044: Introduction to Programming in C</b></li><li>◇ <b>CS 3114: Intermediate Data Structures and Algorithms</b></li><li>◇ <b>CS 3704: Intermediate Software Design</b></li><li>◇ <b>CS 3714: Android Mobile Development</b></li><li>◇ <b>CS 4704: Software Engineering Capstone</b></li><li>◇ <b>CS 5040: Data Structures and Algorithms</b></li><li>◇ <b>CS 5744: Software Design and Quality</b></li></ul>
Industrial and Systems Engineering	<ul style="list-style-type: none"><li>◇ <b>ISE 2034: Data Management for Industrial Engineers</b></li></ul>

## Service

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2023-present	<ul style="list-style-type: none"><li>◇ <b>VT TLOS Community of Practice</b> Digital Assessment Tools and Strategies Community Leader</li><li>◇ <b>VT TLOS Flexible Teaching</b> Faculty Fellow</li></ul>
2022-present	<ul style="list-style-type: none"><li>◇ <b>AccessComputing</b> National consortium of CS programs working to make CS more accessible to all. Virginia Tech Representative</li><li>◇ <b>Virginia Tech IT Transformation</b> Teaching and Learning Technology Subcommittee Virginia Tech Faculty Senate Representative</li></ul>

## Service (continued)

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- ◇ **Virginia Tech Department of Computer Science** Faculty Search Committee  
Member: Collegiate Faculty Search  
Member: Instructor Search
- 2021-Present ◇ **Virginia Tech Tech Talent Innovation Program** Innovation Campus Enrollment Strategic Planning Working Group
- ◇ **Frontiers in Education** Review Editor
- 2020-Present ◇ **Virginia Tech Department of Computer Science** Coordinator of Online Teaching and Learning
- ◇ **Virginia Tech Department of Computer Science** Undergraduate Program Committee
- 2019-Present ◇ **Educause** Student Success Analytics Working Group
- 2019-20 ◇ **Virginia Tech Division of Information Technology** Cloud Strategy Working Group
- ◇ **FIRST Robotics** Match Volunteer
- 2018-Present ◇ **Virginia Tech Accessibility Services**  
IT Accessibility Working Group
- 2018-19 ◇ **Virginia Tech Division of Information Technology** Role-based Access Control Re-engineering Working Group
- 2018-2020 ◇ **Virginia Tech Accessibility Services** Web Accessibility Service Grant Program
- 2017-Present ◇ **ACM SIGCSE Technical Symposium** Reviewer  
CS Education Research Papers  
Birds-Of-A-Feather Meeting Proposals  
Experience Papers
- 2018-Present ◇ **ACM ITiCSE** Paper Reviewer
- 2010-14 ◇ **Virginia Tech Accessibility Services** Web Accessibility Standards Committee

## Professional Development

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- 2023 ◇ **VT TLOS Instructional Design Working Group**
- ◇ **Duke University Cultural Competence in Computing**  
Third Cohort member
- 2022 ◇ **VT Professional Development Network Flexible and Online Learning Focus Group**  
Focus Group member
- 2021 ◇ **VT Center for Excellence in Teaching and Learning Course Design Clinic**  
Clinic Participant
- ◇ **VT Professional Development Network Data-Informed Teaching Working Group**  
Working Group member

## Sponsored Research

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- 2021-present ◇ **4-VA Tech-talent Innovation Program: Content Sharing Framework Working Group (State)**  
PI: Total funded amount: \$16,000
- 2020-2021 ◇ **4-VA Tech-talent Innovation Program: CS Course Sharing Initiative Phase II (State)**  
Key Personnel

## Sponsored Research (continued)

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- 2011-2015   ◇ **U.S. Department of Energy** Global Initiatives for Proliferation Prevention (Federal)  
Co-PI (25%) Total funded amount: \$2,037,927
- 2008       ◇ **CSS Inc Mobiltrax Product Support** (Private)  
Co-PI (50%) Total funded amount: \$180,116

## Miscellaneous Experience

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### Memberships

- 2007-present   ◇ **Association of Computing Machinery**
- ◇ **Institute of Electrical and Electronics Engineers**
- 2005-present   ◇ **Phi Kappa Phi Honor Society**

### Certifications

- 2019       ◇ **Certified Professional in Accessibility Core Competencies (CPACC)**. International Association of Accessibility Professionals.
- 2018       ◇ **ITIL Foundations**. Awarded by Axelos Global, UK.

## Skills

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- Design/  
Management   ◇ Project Management, Requirements Elicitation/Management, Design for Accessibility, Universal Design
  
- Coding       ◇ Java, Kotlin, Python, SQL, PHP, L<sup>A</sup>T<sub>E</sub>X, Swift/Obj-C, Visual Basic.NET, C#.NET
- Databases   ◇ MySQL, PostgreSQL, SQLite, Oracle, MS SQL Server
- Cloud/Web   ◇ HTML, CSS, JavaScript, Node, Amazon Web Services, Docker.

## References

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Available on Request