

## Suzanne J. Matthews

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West Point, NY 10996 USA US Citizen; TS Clearance

EDUCATION **Ph.D., Computer Science** - Texas A&M University May 2012  
**M.S., Computer Science** - Rensselaer Polytechnic Institute May 2008  
**B.S., Computer Science** - Rensselaer Polytechnic Institute May 2006

RESEARCH INTERESTS Parallel Computing, Single Board Computers, Experimental Computer Science, Data Analysis, Computational Biology.

SELECT HONORS AND AWARDS Invited Speaker, 2018 TEDx West Point - West Point 2018  
USMA Research Video Highlight (D/EECS) - West Point 2016  
Computer Science Education Excellence Award (D/EECS) - West Point 2016  
Dean's Teaching Award Finalist - West Point 2015, 2016  
CRA-W Alum Highlight, Summer-Fall Newsletter 2013  
Texas A&M University Dissertation Fellowship 2011 - 2012  
Clay Williams Distinguished Former Student Scholarship 2011  
CSE Graduate Leadership Award, Texas A&M University 2010  
The Honor Society of Phi Kappa Phi ( $\Phi K \Phi$ ) Inducted 2010  
Robert P. Ingalls  $\Upsilon I I E$  Chapter Award, Rensselaer Polytechnic Institute 2008  
Master Teaching Fellowship, Rensselaer Polytechnic Institute 2007 - 2008  
Upsilon Pi Epsilon International Honor Society ( $\Upsilon I I E$ ) Inducted 2005  
CRA-W Distributed Mentoring Project Summer Research Award 2006

PROFESSIONAL EXPERIENCE United States Military Academy - West Point, NY 10996 July 2012 - Present  
◦ Associate Professor, Department of EE & CS (08/17 - Present)  
◦ Cyber Affiliate, Cyber Research Center (01/15 - Present)  
◦ Research Fellow, Network Science Center (09/12 - Present)  
◦ Assistant Professor, Department of EE & CS (07/12 - 08/17)  
  
Texas A&M University - College Station, TX 77843 June 2008 - May 2012  
◦ Texas A&M University Dissertation Fellow (09/11 - 05/12)  
◦ Research Assistant, Department of Computer Science & Engineering (06/08 - 08/11)  
  
Rensselaer Polytechnic Institute - Troy, NY 12180 August 2006 - May 2008  
◦ Rensselaer Master Teaching Fellow (08/07 - 05/08)  
◦ Research Assistant, Department of Computer Science (06/07 - 12/07)  
◦ Teaching Assistant, Department of Computer Science (08/06 - 05/07; 01/08 - 05/08)  
  
Texas A&M University - College Station, TX 77843 June 2006 - August 2006  
◦ Undergraduate Researcher, CRA-W DMP Program

INVITED TALKS **Invited Technical Presentations**  
1. S. J. Matthews, "Tomorrow's personal computer." Online: <https://youtu.be/KaX-nCjiV5g>.  
TEDx - West Point, West Point NY. February 1, 2018  
2. S. J. Matthews, "Parallel computing on the raspberry pi." TeenTech NY Conference,  
New York NY, November 2017

3. S. J. Matthews, R. A. Brown, J. C. Adams, and E. Shoop, “An introduction to parallel computing on the raspberry pi.” 2017 SIAM Conference on Computational Science & Engineering (CSE’17) - Broader Engagement Program, Atlanta GA, March 2017
4. R. A. Brown and S. J. Matthews, “Roundtable workshop: PDC in core undergraduate education.” 2016 IEEE International Parallel & Distributed Processing Symposium (IPDPS’16), Chicago IL, May 2016
5. S. J. Matthews, “Student parallella and student pi.” 2015 CSinParallel Workshop, Chicago IL (remote talk), August 2015
6. S. J. Matthews, “Saving the forest for the trees: The case for preserving phylogenetic tree collections.” ACM International Workshop on Big Data in Life Sciences (BigLS’15), Atlanta GA, September 2015
7. S. J. Matthews and W. T. L., “An efficient and extensible approach for compressing phylogenetic trees.” 2011 Evolution Conference, Norman OK, June 2011

#### **Invited Talks for Mentorship**

- “Choosing What’s Right For You”, Grace Hopper Conference Town Hall series, 2015 Grace Hopper Conference, Houston TX, October 15, 2015.
- “Pitching Yourself Forward”, Girls Who Code speaker series, Girls Who Code HQ, Goldman Sachs, New York, NY, August 9, 2013.
- “Achieving Your Dreams with Computer Science and Engineering”, Mother-Daughter Engineering Breakfast, Suffern Middle School, Suffern NY, Feb 2, 2013.

#### **LEADERSHIP**

##### **Academy/Department Leadership**

- Founder and Faculty Chair, EECS Systems (ACM-W chapter), 2012 - Present
- Chair, USMA Dean’s Service Award Committee, 2018 - Present
- USMA Academic Research Council, 2018 - Present
- USMA Academic Freedom Advisory Committee, 2017 - Present
- Workshop Co-Leader, USMA HPC Users Workshop, 2016 - Present
- USMA Faculty Manual Committee (Formerly Rules Committee), 2015

##### **National Conference/Workshop Leadership**

- Scholarship Committee Co-Chair, Grace Hopper Celebration of Women in Computing (2018, 2017, 2016, 2015, 2014)
- Guest Editor, Journal of Information Security & Applications (2018)
- Student Papers Chair, ICDIS’18 Conference (2018)
- Paper Session Chair, ACM SIGCSE (2018, 2015), CCSC-Eastern (2015)
- Workshop Co-organizer, CSinParallel 2016 Delaware Valley Regional Workshop. Villanova University, 07/2016.

##### **Hour of Code Workshop Leadership**

- “Hour of Code: The Adventures of ScriptKitty”, West Point Middle School Coding Club, West Point, NY, April 17, 2018.
- “Hour of Code: Learning Scratch on the Raspberry Pi”, West Point Middle School Coding Club, West Point, NY, Dec. 5, 2017. With Katherine Duncan.
- “Hour of Code: Picobot”, Brooklyn High Schools (Grand Street Campus), Brooklyn, NY, Jun. 2, 2017. With Akintayo Holder and Ethan Glasser-Camp.
- “Hour of Code: Dragon Dash”, West Point Middle School Coding Club, West Point, NY, Feb. 21, 2017. With Benjamin Klimkowski.
- “Hour of Code: Build an App with MIT App Inventor”, Project Hope/Detroit Public Schools, Detroit, MI, November 25, 2014. With CDT Alex Molnar, John Borger, Megan Conger, Tre’Anna Smith, Alicia Clark, Alexandra Davis and Alexa Porcaro.
- “Hour of Code: Build an App with MIT App Inventor”, STEM for Girls Workshop, United States Military Academy, West Point, NY, March 8, 2014. With Jean Blair

and Peggy Leonowich-Graham.

## TEACHING

### Courses Taught (Designer<sup>§</sup>, Course Director<sup>†</sup>)

**CS 380 - Computer Organization<sup>§†</sup>** : I designed this course to give students an appreciation of how the code they write is influenced and impacted by the underlying hardware. The course is the students' first introduction to C programming, and is required by all majors. AY16, AY17, AY18-1, AY19-1

**XE 401/402 - Integrative Capstone Experience** : Supervised and provided technical mentorship to 10 capstone teams over the Computer Science, Information Technology and Electrical Engineering programs, involving approximately 37 cadets. Several students have written papers that were accepted to peer-reviewed venues, and won awards for their capstone work. AY15, AY16, AY17, AY18, AY19.

**CS 474 - Fundamentals of Computer Theory<sup>†</sup>** : Introduces students to the theoretical underpinnings of the computing discipline, including the classes of problems that can (and cannot) be solved by modern computers. AY14-1, AY17-2, AY18-2.

**CS489 - Advanced Individual Study in Computer Science** : An opportunity for students to explore advanced topics in computing through a personal research project that is conducted over the course of a semester. This has resulted in two student publications.

**CS 485 - Parallel Computing<sup>§†</sup>** : An upper-level computer science elective that I designed to help pilot the introduction of parallel computing concepts into the core CS curriculum. A significant portion of the parallel computing concepts covered in this course were incorporated into the design of CS380. AY15-2

**CS 301 - Fundamentals of Computer Science<sup>§†</sup>** : First course in sequence for Computer Science majors. While this course was originally taught in Ada, I was tasked my first semester as a faculty member to redesign the course completely. The version I designed introduced students to the Python language, in lieu of Ada. The course would go on to be the first course in major for the Information Technology majors. AY13-2, AY14, AY15.

**IT 105 - Introduction to Computing & Information Technology** : CS0 core course that is required for all freshmen at West Point. Provides a breadth-first introduction to computing, information technology, and electronics. AY13-1

## ADVISING

### Select Undergraduate Research Students

I have supervised more than 35 undergraduate students in various research projects, including 3 women and 2 Hispanic students. Roughly a quarter have gone on to attend graduate programs, several on prestigious scholarships. A few are highlighted below:

- 2LT Andrés Alejos (QM): 08/17 - 05/18. Currently GEM Fellow and graduate student at Purdue University.
- 2LT Leonard Kosta (CY): 05/16 - 05/17. Currently Draper Laboratories Graduate Fellow and graduate student at Boston University.
- 1LT Jinny Yan (CY): 08/15 - 05/16. MIT Lincoln Labs Military Fellowship. M.S. in Computer Science, Northeastern University.
- 1LT Lisa Jones (CY): 08/13 - 05/16. 2016 Churchill Scholar; 2016 CRA Outstanding Female Researcher Award; 2016 NSF Graduate Research Fellowship; 2013-2014 CRA-W CREU Awardee. M.S. in Mathematics, Cambridge University.
- 1LT Leo St. Amour (CY): 08/14-05/15. MIT Lincoln Labs Military Fellowship. M.S. in Computer Science, Northeastern University (2017).
- 1LT Frederick Ulrich (CY): 08/14-05/15. MIT Lincoln Labs Military Fellowship. M.S. in Computer Science, Northeastern University (2017).
- CPT Joseph Hannigan (CY): 08/12-05/14. Honorable Mention, NSF Graduate Research Fellowship.

- 2013-2014 CRA-W CREU Program Students: CPTs Rosemary Betros, Nathaniel Rollings, and Bryce Tyson. 1LTs Jorge Figueroa-Cecco, Lisa Jones

### Full List of Former Undergraduate Research Students

- Spencer Drakontaidis, Nikolay Shopov
- 2LTs Andrés Alejos ('18 QM), Matthew Ball ('18 CY), Chris Booth ('17 AR), David Brownfield ('17 CY), Kasey Candelario ('17 FA), Sean Deaton ('17 CY), Connor Eckert ('18 CY), Mingu Jeong ('18 MS), Leonard Kosta ('17 CY), Michael Ma ('18 SC), Brennan Nesoralla ('18 IN), Michael Parros ('16 IN), Evin Rude ('18 IN), Michael Stanchi ('18 CY), Hayden Ward ('18 FA), and Zhaozhong “Bob” Zhu ('17 EN).
- 1LTs Jorge Figueroa-Cecco ('15 IN), Scott Horras ('15 CY), Colin Hwang ('16 MI), Michael Jenkins ('16 EN), James Lee ('16 MI), Lisa Jones ('16 CY), Andreas Kellas ('15 CY), Arthur Lacey ('16 CY), Jessie Lass ('16 CY), Alexander Molnar ('15 CY), Timothy Nosco ('16 CY), Zachary Panto ('16 FA), Zachary Ramirez ('14 CY), Jakub Smola ('16 CY), Leo St. Amour ('15 CY), Frederick Ulrich ('15 CY), Jinny Yan ('16 CY).
- CPTs Rosemary Betros ('14 EN), Joseph Hannigan ('14 CY), Nathaniel Rollings ('14 CY), Bryce Tyson ('14 FI).

### Other Advising

**Department Academic Counselor** : I have served as the official Department Academic Counselor (DAC) for 20 computer science majors. I was in charge of helping them create their 8-term academic plan, advising them on electives, and helping them solidify their plans for after graduation.

**Graduate School Mentor** : I have mentored additional cadets through the scholarship process, helping them understand the path to graduate school and what options are possible, even though they do not do direct research with me. I have also written letters of recommendation for them. Two are currently attending graduate school on competitive scholarships.

### RESEARCH FUNDING

#### External Funding

1. U.S. Army Engineer Research and Development Center, *Increasing the Exposure of Parallel Computing at the United States Military Academy*, PI, \$246,252.00. 2016-present.
2. Additional funding of \$75,000.00 received from ARDEC (Co-PI: Dr. Aaron St. Leger), 2016-Present
3. Computing Research Association, *Exploring MapReduce for Comparing Large Collections of Phylogenetic Trees*, Collaborative Research Experience for Undergraduates (CREU), PI, \$6,000, 2013.

#### Internal Funding

1. Army Research Labs, *Leveraging MapReduce for Anomaly Detection in Smart Grids*, ARL Faculty and Cadet Collaborative Research Program, Co-PI with Dr. Aaron St. Leger, \$3,149.00, 2016.
2. Army Research Labs, *Parallel Author Verification of E-mail*, ARL Faculty and Cadet Collaborative Research Program, PI, \$3,211.60, 2015.
3. Defense Advanced Research Projects Agency, *Leveraging MapReduce for Email Authorship Identification*, Undergraduate Research Opportunity Program (UROP), PI, \$1,000, 2014.

### Peer-Reviewed Journal Articles<sup>1</sup>

1. J. C. Adams, S. J. Matthews, E. Shoop, D. Toth, and J. Wolfer, “Using inexpensive microclusters and accessible materials for cost-effective parallel and distributed computing education,” *Journal of Computational Science Education*, vol. 8, pp. 2–10, December 2017. 10.22369/issn.2153-4136/8/3/1
2. S. J. Matthews and A. St. Leger, “Leveraging mapreduce and synchrophasors for real-time anomaly detection in the smart grid,” *IEEE Transactions on Emerging Topics in Computing: Special Issue on Big Data Computing in the Smart Grid*, vol. PP, no. 99, pp. 1–12, 2017. 10.1109/TETC.2017.2694804, To appear
3. S. J. Matthews, “Using phoenix++ mapreduce to introduce undergraduate students to parallel computing,” *J. Comput. Sci. Coll.*, vol. 32, pp. 165–174, June 2017. <http://dl.acm.org/citation.cfm?id=3069658.3069682>
4. C. Chewar and S. J. Matthews, “Lights, camera, action!: Video deliverables for programming projects,” *J. Comput. Sci. Coll.*, vol. 31, pp. 8–17, Jan. 2016. <http://dl.acm.org/citation.cfm?id=2835377.2835380>
5. S. J. Matthews, “Teaching with parallella: A first look in an undergraduate parallel computing course,” *J. Comput. Sci. Coll.*, vol. 31, pp. 18–27, Jan. 2016. <http://dl.acm.org/citation.cfm?id=2835377.2835381>, **Best Paper, Award, CCSC Eastern 2015**
6. Z. J. Ramirez\*, R. W. Blaine, and S. J. Matthews, “Augmenting the remotely operated automated mortar system with message passing,” *CrossTalk, The Journal of Defense Software Engineering*, vol. 28, no. 6, pp. 12–16, 2015
7. S. J. Matthews, “Heterogeneous compression of large collections of evolutionary trees,” *IEEE/ACM Transactions on Computational Biology and Bioinformatics*, vol. 12, pp. 807–814, July 2015. <https://doi.org/10.1109/TCBB.2014.2366756>
8. V. Ramakrishnan, S. P. Srinivasan, S. M. Salem, S. J. Matthews, W. Colón, M. Zaki, and C. Bystroff, “Geofold: Topology-based protein unfolding pathways capture the effects of engineered disulfides on kinetic stability,” *Proteins: Structure, Function, and Bioinformatics*, vol. 80, no. 3, pp. 920–934, 2012. <http://dx.doi.org/10.1002/prot.23249>
9. S. J. Matthews and T. L. Williams, “An efficient and extensible approach for compressing phylogenetic trees,” *BMC Bioinformatics*, vol. 12, no. 10, p. S16, 2011. 10.1186/1471-2105-12-S10-S16, Also technical report No. 2011-5-2, Texas A&M University
10. G. R. Brammer, R. W. Crosby, S. J. Matthews, and T. L. Williams, “Paper mâché: Creating dynamic reproducible science,” *Procedia Computer Science*, vol. 4, no. Supplement C, pp. 658 – 667, 2011. 10.1016/j.procs.2011.04.069, **Finalist in Elsevier Executable Paper Grand Challenge**
11. S. J. Matthews and T. L. Williams, “MrsRF: an efficient mapreduce algorithm for analyzing large collections of evolutionary trees,” *BMC bioinformatics*, vol. 11, no. 1, p. S15, 2010. 10.1186/1471-2105-11-S1-S15, **Highly accessed.**
12. S.-J. Sul, S. Matthews, and T. L. Williams, “Using tree diversity to compare phylogenetic heuristics,” *BMC bioinformatics*, vol. 10, no. 4, p. S3, 2009. 10.1186/1471-2105-10-S4-S3

### Peer-Reviewed Conference Papers<sup>1</sup>

13. S. Drakontaidis\*, M. Stanchi\*, G. Glazer\*, J. Hussey, A. St. Leger, and S. J. Matthews, “Towards energy-proportional anomaly detection in the smart grid,” in *Accepted to 2018 IEEE High Performance Extreme Computing Conference (HPEC)*, pp. 1–6, Sept 2018. to appear
14. S. J. Matthews, J. C. Adams, R. A. Brown, and E. Shoop, “Portable parallel computing with the raspberry pi,” in *Proceedings of the 49th ACM Technical Symposium on Computer Science Education, SIGCSE ’18*, (New York, NY, USA), pp. 92–97, ACM,

<sup>1</sup>Matthews’ undergraduate research advisees noted with asterisk (\*).

2018. 10.1145/3159450.3159558

15. S. J. Matthews and A. St. Leger, “Leveraging single board computers for anomaly detection in the smart grid,” in *2017 IEEE 8th Annual Ubiquitous Computing, Electronics and Mobile Communication Conference (UEMCON)*, pp. 437–443, Oct 2017. 10.1109/UEMCON.2017.8249031, **Best Paper Award**
16. S. Deaton\*, D. Brownfield\*, L. Kosta\*, Z. Zhu\*, and S. J. Matthews, “Real-time regex matching with apache spark,” in *2017 IEEE High Performance Extreme Computing Conference (HPEC)*, pp. 1–6, Sept 2017. 10.1109/HPEC.2017.8091063
17. L. Kosta\*, H. Hunter, G. George, A. Strelzoff, and S. J. Matthews, “Measuring I/O performance of lustre and the temporary file system for tradespace applications on hpc systems,” in *Proceedings of the ACM SouthEast Conference*, ACM SE ’17, (New York, NY, USA), pp. 187–190, ACM, 2017. 10.1145/3077286.3077326
18. S. J. Matthews, R. W. Blaine, and A. F. Brantly, “Evaluating single board computer clusters for cyber operations,” in *2016 International Conference on Cyber Conflict (CyCon U.S.)*, pp. 1–8, Oct 2016. 10.1109/CYCONUS.2016.7836622
19. S. J. Matthews, “Accurate simulation of large collections of phylogenetic trees,” in *2015 IEEE International Conference on Bioinformatics and Biomedicine (BIBM)*, pp. 113–118, Nov 2015. 10.1109/BIBM.2015.7359665
20. J. Hannigan\*, S. J. Matthews, J. K. Wickiser, and P. Shakarian, “A network-based approach for identifying cancer causing pathogens,” in *Proceedings of the 2014 ACM Southeast Regional Conference*, ACM SE ’14, pp. 56:1–56:5, 2014. <http://doi.acm.org/10.1145/2638404.2735459>
21. B. Tyson\*, R. Betros\*, N. Rollings\*, J. Figueroa-Cecco\*, L. Jones\*, and S. J. Matthews, “Using mapreduce to compare large collections of phylogenetic trees,” in *Proceedings of the 2014 ACM Southeast Regional Conference*, ACM SE ’14, pp. 57:1–57:5, 2014. <http://doi.acm.org/10.1145/2638404.2735460>
22. S. Matthews, S.-J. Sul, and T. L. Williams, “A novel approach for compressing phylogenetic trees,” in *Bioinformatics Research and Applications ISBRA 2010*, Lecture Notes in Computer Science, pp. 113–124, Springer, 2010. 10.1007/978-3-642-13078-6.13
23. S. J. Sul, S. Matthews, and T. L. Williams, “New approaches to compare phylogenetic search heuristics,” in *2008 IEEE International Conference on Bioinformatics and Biomedicine*, pp. 239–245, Nov 2008. 10.1109/BIBM.2008.81

#### Peer-Reviewed Computer Science Education Special Session Papers

24. J. C. Adams, J. Caswell, S. J. Matthews, C. Peck, E. Shoop, D. Toth, and J. Wolfer, “The micro-cluster showcase: 7 inexpensive beowulf clusters for teaching pdc,” in *Proceedings of the 47th ACM Technical Symposium on Computing Science Education*, SIGCSE ’16, pp. 82–83, ACM, 2016. <http://doi.acm.org/10.1145/2839509.2844670>
25. J. C. Adams, J. Caswell, S. J. Matthews, C. Peck, E. Shoop, and D. Toth, “Budget beowulfs: A showcase of inexpensive clusters for teaching pdc,” in *Proceedings of the 46th ACM Technical Symposium on Computer Science Education*, SIGCSE ’15, pp. 344–345, ACM, 2015. <http://doi.acm.org/10.1145/2676723.2677317>
26. N. Parlante, J. Zelenski, P.-M. Osera, M. Stepp, M. Sherriff, L. Tychonievich, R. Layer, S. J. Matthews, A. Obourn, D. R. Raymond, J. Hug, and S. Reges, “Nifty assignments,” in *Proceedings of the 46th ACM Technical Symposium on Computer Science Education*, SIGCSE ’15, pp. 673–674, ACM, 2015. <http://doi.acm.org/10.1145/2676723.2677327>

#### Peer-Reviewed Undergraduate Conference Papers<sup>1</sup>

27. K. Candelario\*, C. Booth\*, A. St. Leger, and S. J. Matthews, “Investigating a raspberry pi cluster for detecting anomalies in the smart grid,” in *2017 IEEE MIT Undergraduate Research Technology Conference (URTC)*, pp. 1–4, Nov 2017. 10.1109/URTC.2017.8284197, **Best Paper Award**

28. J. Yan\* and S. J. Matthews, “Applying clustering algorithms to determine authorship of chinese twitter messages,” in *2016 IEEE MIT Undergraduate Research Technology Conference (URTC)*, pp. 1–4, Nov 2016. 10.1109/URTC.2016.8361150
29. T. Nosco\*, L. Jones\*, J. Smola\*, J. Lass\*, J. Bell, W. Pulleyblank, S. J. Matthews, and C. Okasaki, “Exploring the oriented graceful labeling conjecture on lobster trees,” in *Proceedings of the National Council of Undergraduate Research*, NCUR, National Council on Undergraduate Education, 2016
30. C. Hwang\*, M. Parros\*, J. Russell\*, D. Chamberlen\*, J. Spruce, A. St. Leger, and S. J. Matthews, “Using mapreduce to detect anomalies in the real-time smart grid,” in *Proceedings of the National Council of Undergraduate Research*, NCUR, National Council on Undergraduate Education, 2016

#### Technical Reports & Invited Publications<sup>1</sup>

31. S. Deaton\*, S. Hutchison, and S. J. Matthews, “Using machine learning to predict the popularity of reddit comments,” in *HPC Insights Magazine*, 2017. In Press
32. L. St. Amour\*, F. Ulrich\*, A. Kellas\*, A. Molnar\*, and S. J. Matthews, “Pave: Write-print creation with mapreduce,” Technical Report AD1005367, Defense Technical Information Center, Army Research Labs, 2015

#### Dissertation & Thesis

33. S. J. Matthews, *Efficient Algorithms for Comparing, Storing, and Sharing Large Collections of Evolutionary Trees*. PhD thesis, Department of Computer Science & Engineering, Texas A&M University, College Station, TX, 2012
34. S. J. Matthews, “Visualizing pathways: An exploration of the protein unfolding process,” Master’s thesis, Department of Computer Science, Rensselaer Polytechnic Institute, Troy, NY, 2008

#### Peer-Reviewed Posters and Presentations<sup>1</sup>

1. N. Shopov\*, M. Jeong\*, E. Rude\*, B. Nesoralla\*, S. Hutchison, A. Mentis, and S. J. Matthews, “Investigating tensorflow for airport facial identification: Poster,” in *Proceedings of the 5th Annual Symposium and Bootcamp on Hot Topics in the Science of Security*, HoTSoS ’18, pp. 23:1–23:1, ACM, April 2018. 10.1145/3190619.3191692
2. S. Drakontaidis\*, M. Stanchi\*, G. Glazer\*, A. Davis\*, M. Stark\*, C. Clay\*, J. Hussey, N. Barry, A. S. Leger, and S. J. Matthews, “Integrating historical and real-time anomaly detection to create a more resilient smart grid architecture: Poster,” in *Proceedings of the 5th Annual Symposium and Bootcamp on Hot Topics in the Science of Security*, HoTSoS ’18, pp. 22:1–22:1, ACM, April 2018. 10.1145/3190619.3191683
3. A. Alejos\*, M. Ball\*, C. Eckert\*, M. Ma\*, H. Ward\*, P. Hanlon, and S. J. Matthews, “Exploring the raspberry pi for data summarization in wireless sensor networks: Poster,” in *Proceedings of the 5th Annual Symposium and Bootcamp on Hot Topics in the Science of Security*, HoTSoS ’18, pp. 18:1–18:1, ACM, April 2018. 10.1145/3190619.3191679
4. D. Brownfield\*, S. Deaton\*, L. Kosta\*, Z. Zhu\*, and S. J. Matthews, “Leveraging apache spark for real-time regex matching on bro log data.” Consortium for Computing Science in Colleges - Northeastern Region (CCSC NE’18) Undergraduate Research Competition, **Best Poster**, Albany NY (Also won 4th place at HPC Day in Dartmouth MA in May 2017), April 2017
5. J. Lee\*, A. Lacey\*, Z. Panto\*, M. Jenkins\*, and S. J. Matthews, “A k-means approach for attributing the authorship of anonymous e-mail.” National Conference on Undergraduate Research (NCUR’16), Asheville NC, April 2016
6. S. Horras\*, R. Gerber, and S. J. Matthews, “Investigating job configuration efficiency on hpc resources at NERSC.” National Conference on Undergraduate Research (NCUR’15), Cheney WA, April 2015
7. A. Kellas\*, A. Molnar\*, L. St. Amour\*, F. Ulrich\*, and S. J. Matthews, “Parallel

- author verification of e-mail (abstract only),” in *Proceedings of the 46th ACM Technical Symposium on Computer Science Education*, SIGCSE '15, pp. 717–717, ACM, March 2015. 10.1145/2676723.2693634
8. L. Jones\*, R. Betros\*, B. Tyson\*, N. Rollings\*, J. Figueroa-Cecco\*, and S. J. Matthews, “Using mapreduce to compare large collections of evolutionary trees.” 2014 Grace Hopper Celebration of Women in Computing (GHC'14), Phoenix AZ, October 2014
  9. J. Hannigan\*, S. J. Matthews, J. K. Wickiser, and P. Shakarian, “Leveraging host protein network topology to identify cancer causing pathogens.” ACM Student Research Competition, 2014 ACM Richard Tapia Conference, Seattle WA, **Best Poster** (Also awarded Best Poster at the 2013 USMA Network Science Poster Competition, May 2013), February 2014
  10. S. J. Matthews and T. L. Williams, “An efficient and extensible approach for compressing phylogenetic trees.” Eight annual conference of the midsouth computational biology and bioinformatics society (MCBIOS'11) **First Place**, April 2011
  11. S. J. Matthews, S.-J. Sul, and T. L. Williams, “Effective phylogenetic compression with treezip.” Informatics for Phylogenetics, Evolution, and Biodiversity (iEvo-Bio'10), Portland OR, Available from Nature Precedings: <http://hdl.handle.net/10101/npre.2010.4613.1>, June 2010
  12. S. J. Matthews, S. J. Sul, and T. L. Williams, “Treezip: A new algorithm for compressing large collections of evolutionary trees,” in *2010 Data Compression Conference*, pp. 544–544, March 2010. 10.1109/DCC.2010.64
  13. A. Dal-Molin, S. J. Matthews, S.-J. Sul, J. Munro, J. Woolley, T. Heraty, and T. L. Williams, “Large datasets, large sets of trees, and how many brains? – visualization and comparison of phylogenetic hypotheses inferred from rdna in chalcidoidea (hymenoptera).” Entomological Society of America (ESA) Annual Meeting: Student Competition for the President’s Prize, Indianapolis IN, December 2009
  14. S. J. Matthews, S.-J. Sul, and T. L. Williams, “Using mapreduce for evolutionary trees on multicore platforms.” ACM Student Research Competition, 2009 ACM Richard Tapia Conference, Portland OR, April 2009

#### **Peer-Reviewed Conference Panels, BOF, & Workshops**

15. J. C. Adams, R. A. Brown, J. Kawash, S. J. Matthews, and E. Shoop, “Leveraging the raspberry pi for cs education,” in *Proceedings of the 49th ACM Technical Symposium on Computer Science Education*, SIGCSE '18, pp. 814–815, ACM, February 2018. 10.1145/3159450.3159611
16. R. Brown, J. Adams, S. Matthews, and E. Shoop, “Teaching parallel and distributed computing with mpi on raspberry pi clusters: (abstract only),” in *Proceedings of the 49th ACM Technical Symposium on Computer Science Education*, SIGCSE '18, pp. 1054–1054, ACM, February 2018. 10.1145/3159450.3162369
17. S. J. Matthews, J. C. Adams, R. Brown, and E. Shoop, “Teaching parallel computing with OpenMP on the raspberry pi (abstract only),” in *Proceedings of the 2017 ACM SIGCSE Technical Symposium on Computer Science Education*, SIGCSE '17, pp. 741–741, ACM, March 2017. 10.1145/3017680.3017818, workshop
18. F. Rahman, S. Matthews, K. Shaw, and A. Danyluk, “Can we really do it?: Conducting significant computer science research in primarily undergraduate institutions (PUIs) (abstract only),” in *Proceedings of the 2017 ACM SIGCSE Technical Symposium on Computer Science Education*, SIGCSE '17, pp. 729–729, ACM, March 2017. 10.1145/3017680.3022347, Birds of a Feather
19. S. J. Matthews, B. H. Marshall, J. Walter, and T. L. Williams, “Cultivating more women in academia.” 2016 Grace Hopper Celebration of Women in Computing, Houston TX (Panel), October 2016
20. S. J. Matthews, R. A. Brown, J. C. Adams, and E. Shoop, “Parallel computing with OpenMP on the raspberry pi 2.” 2016 ACM Richard Tapia Conference (Tapia'16), Austin TX, September 2016

21. S. J. Matthews, L. Tapia, N. Amato, and E. Walker, "Navigating the academic job search." 2013 Grace Hopper Celebration of Women in Computing, Minneapolis MN (Panel), October 2013
22. D. Cummings, S. J. Matthews, P. Taelle, N. Bowers, and D. Eberly, "Fake it till you make it: Overcoming imposter syndrome." 2013 ACM Richard Tapia Celebration of Diversity in Computing Conference, Washington DC (Panel), February 2013
23. S. J. Matthews, D. Cummings, C. Lively, A. Davis, and V. Taylor, "Faking it: Overcoming imposter syndrome." 2011 ACM Richard Tapia Celebration of Diversity in Computing Conference, San Francisco CA (Panel), April 2011
24. L. Tapia, C. Lively, and S. J. Matthews, "Steps to a phd: A student's perspective." 2009 ACM Richard Tapia Celebration of Diversity in Computing Conference, Portland OR (Panel), April 2009

#### **Other Invited Talks/Panels (Internal)**

25. "Dean's Faculty Research Panel", United States Military Academy, May 3, 2018. With John Hartke, Dom Larkin, Daniel Milton and Enoch Nagelli.
26. "The Gist of It: Confidential Advice for Women & Minorities in STEM", Society of Women Engineers USMA Chapter Luncheon, West Point NY, January 27, 2016.
27. "Published Authors' Night", United States Military Academy Prep School, August 27, 2015. With Remi Hajjar, Ruth Beitler, Gerard McGowan, and Anthony Johnson.
28. "Published Authors' Night", United States Military Academy Prep School, November 5, 2014. With Cindy Jebb, Marc Napolitano, Don Outing, and Remi Hajjar.
29. S. J. Matthews, "The case for energy proportional data analysis." Cyber Research Center Brownbag Series, West Point NY, August 2018
30. S. J. Matthews, "Why YOU should care about parallel computing: using HPC to solve problems of critical mass." HPC Brown Bag Series, West Point NY, December 2017
31. S. J. Matthews, "Parallelizing data science applications of critical mass." Network Science Center Brown Bag Series, West Point NY, February 2016

#### **SERVICE ACTIVITIES**

##### **Conference Committees**

- o Research Papers Program Committee, ACM SIGCSE (2019)
- o Experiential Reports & Tools Program Committee, ACM SIGCSE (2018)
- o Lightning Talk Program Committee, ACM SIGCSE (2018, 2017)
- o Scholarship Committee, ACM Richard Tapia Celebration of Diversity in Computing (2016, 2015, 2014, 2013)
- o Medical-Technology Track Program Committee (2013)
- o Program Committee, EduHPC Workshop (2016)

##### **Academy/Department Committees**

- o *USMA Dean's Service Award Subcommittee member*, 2016, 2017
- o *CS Program Steering Committee*, (EECS) 2014 - Present
- o *Excellence in Teaching in the IT/Core Award Committee*, (EECS) 2013,2017,2018.
- o *2014 ABET Self-Study Chapter Author and PI Writer*, (EECS). Co-wrote initial draft of Chapter 6 of CS Self Study; assessed courses for various PIs.
- o *2014 CSG Lead Hiring Committee*, (EECS).

##### **Other Department Service**

- o *Leader*, Department Brown Bag: "Inclusive Excellence: Speaking the Subtext". 08/22/2018.
- o *Officer in Charge*, for GHC 2012 and 2013. Co-OIC for GHC 2014 - 2019.
- o CS Program Representative for IT105 Tech Tour, 2013-Present.
- o *Officer in Charge*, 2013 and 2014 Richard Tapia Conferences. Co-OIC for Tapia 2015.
- o *Officer in Charge*, EECS Systems Luncheon (11/16/12, 08/28/13, 09/05/2014), Co-

OIC 02/26/15.

- *Assistant Academic Officer in Charge*, Study Tour Duty (10/28/12).
- Lock-O duty training officer, Summer 2013

**Professional Development**

- *Resident*, HERS Leadership Institute (Luce Program), University of Denver, 06/2011
- *Invited Participant*, CSinParallel Workshop, 08/2014
- *Attendee*, NSF Grant Writing Workshop - Rutgers University, 08/2013
- *Invited Participant*, CRA-W Career Mentoring Workshop (CMW-E), 03/2013.
- *Invited Participant*, NSF ADVANCE NIFP workshop, Rice University, 09/2011.
- *Invited Participant*, CRA-W Grad Cohort (2008, 2009, 2010)

**Conference/Journal Submission Reviewer**

TOE (2017); TETC (2016); TPDS (2015); SIGCSE (2014, 2015, 2016, 2017, 2018, 2019); Systematic Biology (2012); MCBIOS'12; ISBRA'11; iEvoBio'11

**Professional Memberships**

Member, Association for Computing Machinery

2007 - Present

Affiliate, IEEE Computer Society

August 2014 - Present