

# Abdullah Mueen

## Curriculum Vitae

University of New Mexico  
Department of Computer Science  
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### Research Interest

**Temporal Data Mining-Spatial Data Mining-Social Media Mining**-Focusing on trust, privacy, scalability and Interactivity.

### Professional Preparation

- 2012      **PhD (Computer Science)**, University of California, Riverside, CA  
*Dissertation: "Exact primitives for time series data mining,"* Advisor: Dr. Eamonn Keogh
- 2006      **BSc (Computer Science)**, Bangladesh University of Engineering and Technology  
*Dissertation: "Applications of graphs in bioinformatics."* Advisor: Dr. Saidur Rahman

### Appointments

- 2013-      **Assistant Professor**, Department of Computer Science, University of New Mexico  
2013      **Scientist**, Cloud and Information Services Lab, Microsoft Corporation  
2012      **Program Manager**, Online Services Division, Microsoft Corporation  
2009-2011      **Summer Research Intern**, Microsoft Research and HP Labs

### Awards and Honors

- 2012      **Runner-up**, Doctoral Dissertation Award, SIGKDD 2012  
2012      **Best paper award**, SIGKDD 2012  
2010      Travel grants from three top conferences: KDD, SIGMOD and ICDM  
2009      Best paper nomination, ICDM 2009  
2007      **Graduate Research Fellowship**, University of California at Riverside  
2006      **Champion**, webpage development contest for computer science department  
<http://www.buet.ac.bd/cse/>  
2002-2006      Dean's Merit Scholarship for every semester attended in BUET

### Publication Statistics

*Gathered October 2016 from Google Scholar*

- 1438      Citations from 2009-2015, 21 refereed conference and 6 refereed journal papers  
1384      Citations Since 2010  
673      Citation per #3 most cited article  
249      Citations per #1 most cited article  
19      i-10 index, 13 articles cited at least 10 times.  
15      2015 H-index., 15 articles cited at least 15 times since 2009

## Refereed Conference Papers

*Student advisers are highlighted in violet; students highlighted in yellow\* were co-advised for the research article. Acceptance rates are bold faced where known.*

- C1 [Amanda Minnich](#), [Nikan Chavoshi](#), Danai Koutra, and Abdullah Mueen. BotWalk: Efficient Adaptive Exploration of Twitter Bot Networks. In *IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining, (ASONAM'17)*.
- C2 [Noor Abu-El-Rub](#), [Amanda Minnich](#) and Abdullah Mueen. Anomalous Reviews Owing to Referral Incentive. *IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining, (ASONAM'17)*.
- C3 [Noor Abu-El-Rub](#), [Amanda Minnich](#) and Abdullah Mueen. Impact of Referral Incentives on Mobile App Reviews. In *17th International Conference on Web Engineering (ICWE'17)*.
- C4 [Nikan Chavoshi](#), [Hossein Hamooni](#) and Abdullah Mueen. On-Demand Bot Detection and Archival System. In *26th International World Wide Web Conference, WWW Demo 2017*.
- C5 [Nikan Chavoshi](#), [Hossein Hamooni](#) and Abdullah Mueen. DeBot: Twitter Bot Detection via Warped Correlation. In *16th IEEE International Conference on Data Mining, (ICDM'16)*. 181/923, **19.6%**.
- C6 Abdullah Mueen, [Nikan Chavoshi](#), [Noor Abu-El-Rub](#), [Hossein Hamooni](#), [Amanda Minnich](#). AWarp: Fast Warping Distance for Sparse Time Series. In *16th IEEE International Conference on Data Mining, (ICDM'16)*. 78/923, **8.5%**.
- C7 [Chin-Chia Michael Yeh](#), [Yan Zhu](#), Liudmila Ulanova, Nurjahan Begum, Yifei Ding, Hoang Anh Dau, Diego Furtado Silva, Abdullah Mueen, Eamonn Keogh. Matrix Profile I: All Pairs Similarity Joins for Time Series: A Unifying View that Includes Motifs, Discords and Shapelets. In *16th IEEE International Conference on Data Mining, (ICDM'16)*. 181/923, **19.6%**.
- C8 [Yan Zhu](#), [Zachary Zimmerman](#), Nader Shakibay Senobari, Chin-Chia Michael Yeh, Gareth Funning, Abdullah Mueen, Philip Brisk and Eamonn Keogh. Matrix Profile II: Exploiting a Novel Algorithm and GPUs to break the one Hundred Million Barrier for Time Series Motifs and Joins. In *16th IEEE International Conference on Data Mining, (ICDM'16)*. 78/923, **8.5%**.
- C9 [Nikan Chavoshi](#), [Hossein Hamooni](#) and Abdullah Mueen. Identifying Correlated Bots in Twitter. In *8th International Conference on Social Informatics, (SOCINFO'16)*. 63/125, **50%**.
- C10 [Hossein Hamooni](#), [Nikan Chavoshi](#) and Abdullah Mueen. On URL Changes and Handovers in Social Media. In *8th International Conference on Social Informatics, (SOCINFO'16)*. 36/125, **28%**.
- C11 [Tai Ching Li](#), Abdullah Mueen, Michalis Faloutsos and Huy Hang. Comment-Profiler: Detecting trends and parasitic behaviors in online comments. In *8th International Conference on Social Informatics, (SOCINFO'16)*. 36/125, **28%**.
- C12 [Hossein Hamooni](#), Biplob Debnath, Jianwu Xu, Hui Zhang, Geoff Jiang and Abdullah Mueen. LogMine: Fast Pattern Recognition for Log Analytics. In *ACM International Conference on Information and Knowledge Management, (CIKM'16)*. 22/111, **19.8%**

- C13 [Amanda Minnich](#), [Noor Abu-El-Rub](#), Maya Gokhale, Ronald Minnich, Abdullah Mueen. ClearView: Data Cleaning for Online Review Mining. In *IEEE/ACM International Conference on Advances in Social Networks Analysis and Mining (ASONAM'16)*. 84/316, **26%**.
- C14 [Amanda Minnich](#), [Nikan Chavoshi](#), Abdullah Mueen, Shuang Luan and Michalis Faloutsos. TrueView: Harnessing the Power of Multiple Review Sites. In *24th International World Wide Web Conference (WWW'15)*. 131/929, **14%**.
- C15 [Roya Ensafi\\*](#), Philipp Winter, Abdullah Mueen and Jedidiah R. Crandall. Analyzing the Great Firewall of China Over Space and Time. In *15th Privacy Enhancing Technologies Symposium (PETS'15)*. 6/47, **13%**.
- C16 [Mustafa Cetin](#), Abdullah Mueen and Vince Calhoun. Shapelet Ensemble for Multi-dimensional Time Series. In *15th SIAM International Conference on Data Mining (SDM'15)*. 72/491, **14.6%**.
- C17 [Hossein Hamooni](#) and Abdullah Mueen. Dual-domain Hierarchical Classification of Phonetic Time Series. In *14th IEEE International Conference on Data Mining (ICDM'14)*. 71/721, **10%**.
- C18 Abdullah Mueen, [Hossein Hamooni](#) and Trilce Estrada. Time Series Join on Subsequence Correlation. In *14th IEEE International Conference on Data Mining (ICDM'14)*. 71/721, **10%**.
- C19 Greg Iven, Viktor Chekh, Shuang Luan, Abdullah Mueen, Peter Soliz, Wenyao Xu and Mark Burge. Non-contact Sensation Screening of Diabetic Foot Using Low Cost Infrared Sensors. In *27th International Symposium on Computer-based Medical Systems (CBMS'14)*. 88/177, **50%**.
- C20 Xi Chen, Abdullah Mueen, Vijay K. Narayanan, Nikos Karampatziakis, Gagan Bansal and Vipin Kumar. Online Discovery of Group Level Events in Time Series. In *14th SIAM International Conference on Data Mining (SDM'14)*. 120/389, **30%**.
- C21 Mahbub Hasan, Abdullah Mueen and Vassilis Tsotras. Distributed Diversification of Large Datasets. In *Second IEEE Conference on Cloud Engineering (IC2E)*. 21/104, **20%**.
- C22 Abdullah Mueen. Enumeration of Time Series Motifs of All Lengths. In *13th IEEE International Conference on Data Mining (ICDM'13)*. 94/809, **12%**.
- C23 Jesin Zakaria, Abdullah Mueen and Eamonn Keogh. Clustering Time series using Unsupervised-Shapelets. In *12th IEEE International Conference on Data Mining (ICDM'12)*. 81/756, **10.7%**.
- C24 Mahbub Hasan, Abdullah Mueen, Vassilis Tsotras and Eamonn Keogh. Diversifying Query Results on Semi-Structured Data. In *21st ACM international conference on Information and knowledge management (CIKM'12)*. 303/1088, **28%**.
- C25 Thanawin Rakthanmanon, Bilson Campana, Abdullah Mueen, Gustavo Batista, M. Brandon Westover, Qiang Zhu, Jesin Zakaria and Eamonn Keogh. Searching and Mining Trillions of Time Series Subsequences under Dynamic Time Warping. In *18th ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD'12)*. 133/734, **18%**.
- C26 Jesin Zakaria, Sarah Rotschafer, Abdullah Mueen, Khaleel Razak and Eamonn Keogh. Mining Massive Archive of Mice Sounds with Symbolized Representations. In *12th SIAM International Conference on Data Mining (SDM'12)*.
- C27 Bing Hu, Thanawin Rakthanmanon, Bilson Campana, Abdullah Mueen and Eamonn Keogh. Image Mining of Historical Manuscripts to Establish Provenance.

- In *12th SIAM International Conference on Data Mining (SDM'12)*.
- C28 Abdullah Mueen, Eamonn Keogh and Neal Young. Logical-Shapelets: An Expressive Primitive for Time Series Classification. In *17th ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD'11)*. 126/714, **17%**.
- C29 Doruk Sart, Abdullah Mueen, Walid Najjar, Vit Niennattrakul and Eamonn Keogh. Accelerating Dynamic Time Warping Subsequence Search with GPUs and FPGAs. In *10th IEEE International Conference on Data Mining (ICDM'10)*. 166/793, **20%**.
- C30 Abdullah Mueen and Eamonn Keogh. Online Discovery and Maintenance of Time Series Motif. In *16th ACM SIGKDD Conference on Knowledge Discovery and Data Mining (KDD'10)*. 77/578, **13%**.
- C31 Abdullah Mueen, Suman Nath and Jie Liu. Fast Approximate Correlation for Massive Time-Series Data. In *ACM SIGMOD International Conference on Management of data (SIGMOD'10)*. 80/384, **21%**.
- C32 Abdullah Mueen, Eamonn Keogh and Nima Bigdely-Shamlo. Finding Time Series Motifs in Disk-Resident Data. In *9th IEEE International Conference on Data Mining (ICDM'09)*. 69/786, **9%**.
- C33 Abdullah Mueen, Eamonn Keogh, Qiang Zhu, Sydney Cash and M. Brandon Westover. Exact Discovery of Time Series Motifs. In *9th SIAM International Conference on Data Mining (SDM'09)*. 105/351, **30%**.
- C34 Abdullah Al Mueen, Md. Shamsuzzoha Bayzid, Md. Maksudul Alam and Md. Saidur Rahman. A heuristic algorithm for individual haplotyping with minimum error correction. In *BioMedical Engineering and Informatics, 2008. (BMEI'08)*, vol. 1, pp. 792-796.

### Refereed Journal Papers

- J1 Jesin Zakaria, [Abdullah Mueen](#), Eamonn J. Keogh, Neal E. Young: Accelerating the discovery of unsupervised-shapelets. *Data Min. Knowl. Discov.* 30(1): 243-281 (2016)
- J2 [Hossein Hamooni](#), [Abdullah Mueen](#) and Amy Neel. Phoneme Sequence Recognition via DTW-based classification. *Knowl. Inf. Syst.* (2015).
- J3 [Abdullah Mueen](#) and [Nikan Chavoshi](#). Enumeration of time series motifs of all lengths. *Knowl. Inf. Syst.* 45(1): 105-132 (2015).
- J4 Abdullah Mueen. Time series motif discovery: dimensions and applications. *Wiley Interdisc. Rev. Data Mining and Knowledge Discovery* 4(2): 152-159 (2014).
- J5 Xiaoyue Wang, Abdullah Mueen, Hui Ding, Goce Trajcevski, Peter Scheuermann and Eamonn J. Keogh. Experimental comparison of representation methods and distance measures for time series data. *Data Min. Knowl. Discov.* 26(2): 275-309 (2013).
- J6 Thanawin Rakthanmanon, Bilson J. L. Campana, Abdullah Mueen, Gustavo E. A. P. A. Batista, M. Brandon Westover, Qiang Zhu, Jesin Zakaria and Eamonn J. Keogh: Addressing Big Data Time Series: Mining Trillions of Time Series Subsequences Under Dynamic Time Warping. *TKDD* 7(3): 10 (2013).
- J7 Md. Shamsuzzoha Bayzid, Md. Maksudul Alam, Abdullah Mueen and Md. Saidur Rahman. HMEC: A Heuristic Algorithm for Individual Haplotyping with Minimum Error Correction. *ISRN Bioinformatics*, vol. 2013, Article ID 291741, 2013.

- J8 Abdullah Mueen, Eamonn J. Keogh, Qiang Zhu, Sydney Cash, M. Brandon Westover and Nima Bigdely Shamlo. A disk-aware algorithm for time series motif discovery. *Data Min. Knowl. Discov.* 22(1-2): 73-105 (2011)

### Patents Filed

- P1 Abdullah Mueen, Nikan Chavoshi, A Method to Detect Bots in Social Media. (STC Ref. # 2016-003).
- P2 Gagan Bansal, Vijay K. Narayanan and Abdullah Mueen, Seasonality detection in time series data, US20150377938.
- P3 Shuang Luan, Abdullah Mueen, Amanda Minnich and Michalis Faloutsos. A trustworthiness measure for online reviews using multiple sources. Application Number: 62110183
- P4 Abdullah Mueen, Krishnamurthy Viswanathan and Chetan Gupta. Similarity search initialization. US20130290350 A1.
- P5 Abdullah Mueen, Krishnamurthy Viswanathan and Chetan Gupta. Determining distance between data sequences. US20130226904 A1.
- P6 Doruk Sart, Abdullah Mueen, Walid Najjar and Eamonn Keogh. Hardware Acceleration of Dynamic Time Warping Algorithm using FPGAs. UC2011-617-1

### Research Grants

- 12M Total Project budget, *amongst collaborative institutions.*
- 11.7M Total UNM budget
- 995K Total UNM budget committed to Abdullah Mueen
- 918K Total UNM budget committed to Abdullah Mueen as Principal Investigator

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### Active Grants

- 293K NSF #1527127, CCF: SHF: *Small: Collaborative Research:* Domain-specific Reconfigurable Processor for Time-Series Data Mining and Monitoring, PI: Abdullah Mueen, \$293,497.00, 09/1/2015 - 08/30/2018.
- 11.4M NIGMS 1P20GM109089-01A1, UNM Center for Brain Recovery and Repair, PI: Bill Shuttleworth, Abdullah Mueen (one of the Co-PIs), Direct costs: \$11.357M, Mueen Direct cost: \$40K, 09/15/2015-06/30/2020.
- 96K Los Alamos National Laboratory, Exascale Resource Monitoring Tools and Workloads, PI: Dorian Arnold, Co-PI: Abdullah Mueen, UNM budget: \$96K; Mueen budget: \$42K, 02/2015 - 01/2017.
- 75K Los Alamos National Laboratory, F-Electron Database, PI: Abdullah Mueen, UNM budget: \$75K; 05/2016 - 05/2017.
- 20K Office of Vice President of Research, UNM, PRED+CT: A Patient Repository of EEG Data & Computational Tools, PI: James Cavanagh, Co-PI: Abdullah Mueen
- 485K AFRL: Advanced Time Series Data Mining Methods for Seismic Signal Discovery and Detection, PI: Abdullah Mueen, 07/2017 - 06/2020.

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### Equipment Grant

- 40K Microsoft Azure Research Award, Azure credit worth \$40K, PI: Abdullah Mueen. 11/2014-12/2016

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## Pending Grants

491K NSF: IIS: SMALL: Pattern Mining from Sparse Time Series Data, PI: Abdullah Mueen.

## Teaching

Spring 2016 CS 564/464: Introduction to Database Management Systems, *Summary Evaluation: 4.1/5.0*  
Fall 2015 CS 521: Introduction to Data Mining, *Summary Evaluation: 4.3/5.0*  
Spring 2015 CS 564/464: Introduction to Database Management Systems, *Summary Evaluation: 4.2/5.0*  
Fall 2014 CS 591.03: Introduction to Data Mining, *Summary Evaluation: 4.1/5.0*  
Spring 2014 CS 564/464: Introduction to Database Management Systems, *Summary Evaluation: 4.2/5.0*  
Fall 2013 CS 591.03: Introduction to Data Mining, *Summary Evaluation: 4.2/5.0*

## Students and Research Advisement

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### Ph.D. Advisees

Mustafa Sinan Cetin, *Co-advised with Prof. Vince Calhoun*, Data Scientist at Intel  
Amanda Minnich, 5th Year student, expected to start in LLNL in summer 2017  
Hossein Hamooni, 4th Year student, expected to start in VISA in summer 2017  
Nikan Chavoshi, 3rd Year student  
Ian Roy Beaver, 3rd Year student  
Noor Abu-El-Rub, 2nd Year student  
Adnan Ibn Khair, 2nd Year student

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### MS Student Advisees

Sihan Zhao, Fall 2014  
Daniel De Francisco Cabral, Spring 2015  
Duaa Momani, Fall 2015  
Aaron Gonzales, Spring 2016, *Co-advicing with Prof. Dorian Arnold*

## Professional Services and Activities

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### Tutorials

CIKM 2016 Abdullah Mueen. Similarity Search on Time Series Data: Past, Present, and Future  
DSAA 2016 Abdullah Mueen. Similarity Search on Time Series Data: Past, Present, and Future  
KDD 2016 Abdullah Mueen, Eamonn Keogh. Extracting Optimal Performance from Dynamic Time Warping  
ICDM 2014 Abdullah Mueen, Eamonn Keogh. Finding Repeated Structure in Time Series Data  
SDM 2015 Abdullah Mueen, Eamonn Keogh. Finding Repeated Structure in Time Series Data  
Cyberday 2014 Abdullah Mueen, Successful Cases in Scientific Data Mining

## Workshops

KDD 15-17 Mining and Learning from Time Series (MiLeTS), Co-Chair.

## Colloquia

- 2016 *Fifth joint ASA/ASJ meeting: Acoustical Society of America and Acoustical Society of Japan: Primitives of Time Series Mining*  
*Materials Science/Data Technology Nexus: Los Alamos National Laboratory (LANL): Temporal Pattern Mining and Machine Learning for Material Science*
- 2015 *NASA Langley Research Center: (Un)supervised Pattern Mining from Time Series Data for Knowledge Discovery*
- 2014 *New Mexico State University: Exact Discovery of Time Series Motifs*  
*UNM Techday: Review Fraud Detection*  
*STC Technology Social: Review Fraud Detection*  
*UC Davis Network Lab: Successful Cases in Scientific Data Mining*  
*Los Alamos National Lab: Variable Length Pattern Mining from Time Series Data*
- 2013 *CS Colloquium at UNM: Variable Length Pattern Mining from Time Series Data*

## Conference Technical Program Committee Member

2012-17 KDD (2012, 2015-17), SDM (2013-17), ICDM (2013-16), CIKM (2014-17), ICTAI (2016), AAAI (2014)

## Editorial Board Member

2016- Data Mining and Knowledge Discovery (DMKD)

## Journal Reviewer

2011-16 Transactions on Knowledge and Data Engineering (TKDE) (2013-15), Data Mining and Knowledge Discovery (DMKD) (2011-16), Knowledge and Information Systems (KAIS) (2013-14), Transactions on Parallel and Distributed Systems (TPDS) (2015)

## Grant Proposal Review Panels

2015 National Science Foundation Smart and Connected Health program  
2014 National Science Foundation BigData program

## Department Service

2016 Mentor: NSF STEP Program, McNair's Scholars Program  
2015-16 CS Outreach Taskforce  
2014 Graduate Admissions  
2014 CS Outreach Taskforce  
2014 CyberInfrastructure Day Organizing Committee

## References

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Dr. Michalis Faloutsos  
Professor, Computer Science and Engineering, University of California, Riverside  
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Dr. Suman Nath  
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