MOHAMMAD ADIBUZZAMAN

Suite 225, Mann Hall, 203 S Martin Jischke Dr., West Lafayette, Indiana, 47909
(+1)4145789927 ⋄ madibuzz@purdue.edu ⋄ adibzaman.github.io

EDUCATION

Doctor of Philosophy (Ph.D.), Computational Sciences *2015*
Marquette University,Milwaukee, Wisconsin, USA
Master of Science (M.Sc.), Computational Sciences *2012*
Marquette University,Milwaukee, Wisconsin, USA
Bachelor of Science (B.Sc.) *2008*
Bangladesh University of Engineering and Technology (BUET),
Department of Computer Science and Engineering

WORK EXPERIENCE

Regenstrief Center for Healthcare Engineering, Purdue University 2020–present
Assistant Director, Data and Computing

Regenstrief Center for Healthcare Engineering, Purdue University 2018–2020
Research Scientist

CausalAI Lab, Computer Science, Purdue University 2018–2019
Research Scientist

Regenstrief Center for Healthcare Engineering, Purdue University 2015–2018
Assistant Research Scientist

US Food and Drug Administration 2013–2014
Oak Ridge Institute of Science and Engineering Fellow

International Breast Cancer Research Foundation and Marquette University 2012
Research Assistant

Marquette University 2010-2015
Research Assistant

Marquette University 2010-2015
Instructor

National University of Singapore (NUS) 2010
Junior Research Intern

Structured Data Systems Limited (SDSL) 2007-2009
Software Engineer

University of Asia Pacific 2009
Lecturer

ACHIEVEMENT

- Lead system architect at the Regenstrief Center in HIPAA Compliant Cloud Computing Infrastructure for Reproducibility with Health Data

- Lead Scientist at the Regenstrief Center in Artificial Intelligence and Causal Inference
- PI for Multiple large clinical studies with interdisciplinary teams
- Lead coordinator for large groups of researchers on thematic areas of causal inference, health disparity and compute framework.

SKILLS

- Parallel and Distributed Computing, Message passing interface (MPI), cluster computing, Apache Hadoop, Apache HIVE, SciDB distributed database
- Lead architect in large distributed computing environment for integrated health data analytics
- 10 plus years in experience in Java, Python, C, Matlab, Javascript
- Proficient in Unix programming and shell scripting language

PROFESSIONAL MEMBERSHIP

American Medical Informatics Association (AMIA) 2017-current
Member

Intensive Care Unit Working Group (AMIA) 2017-current
Member

Institute of Electrical and Electronics Engineers (IEEE) 2016
Member

Association for Computing Machinery (ACM) 2014
Member

HONORS

Above and Beyond Award, EVPRP, Purdue University 2018

ORISE Fellowship, US FDA, White Oak, MD 2013–2014

Best Paper Award in ACM RACS, Montreal, Canada 2014

Best Poster Award, Marquette University, WI 2011

Best Poster Award, Marquette University, WI 2010

PUBLICATIONS

Systems

1. Fatemeh Rouzbeh, Ananth Grama, Pual Griffin, and Mohammad Adibuzzaman. Collaborative cloud computing framework for health data with open source technologies. *The 11th ACM Conference on Bioinformatics, Computational Biology, and Health Informatics (ACM BCB), 2020*
2. Mohammad Adibuzzaman and Paul M Griffin. Big data in health care delivery. 2020
3. Mohammad Adibuzzaman, Poching DeLaurentis, Jennifer Hill, and Brian Benneyworth. Big data in healthcare– the promises, challenges and opportunities from a research perspective: A case study with a model database. In *AMIA Annual Symposium*, pages 384–392, 2017
4. Mohammad Adibuzzaman, Ken Musselman, Alistair Johnson, Paul Brown, Zachary Pitluk, and Ananth Grama. Closing the data loop: An integrated open access analysis platform for the mimic database. In *2016 Computing in Cardiology Conference (CinC)*, pages 137–140. IEEE, 2016

5. Mohammad Adibuzzaman, Colin Ostberg, Sheikh Ahamed, Richard Povinelli, Bhagwant Sindhu, Richard Love, Ferdaus Kawsar, and Golam Mushih Tanimul Ahsan. Assessment of pain using facial pictures taken with a smartphone. In *2015 IEEE 39th Annual Computer Software and Applications Conference*, volume 2, pages 726–731. IEEE, 2015

6. Munirul M Haque, Ferdaus Kawsar, M Adibuzzaman, SI Ahamed, R Love, R Dowla, D Roe, and R Salim. Mobile based health care solution for breast cancer patients. *Proceedings of M4D 2012 28-29 February 2012 New Delhi, India*, 28(29):23, 2012

7. Mohammad Adibuzzaman, Niharika Jain, Nicholas Steinhafel, Munir Haque, Ferdaus Ahmed, Sheikh Ahamed, and Richard Love. In situ affect detection in mobile devices: a multimodal approach for advertisement using social network. *ACM SIGAPP Applied Computing Review*, 13(4):67–77, 2013

8. Mohammad Adibuzzaman, Niharika Jain, Nicholas Steinhafel, Munir Haque, Ferdaus Ahmed, Shiekh Iqbal Ahamed, and Richard Love. Towards in situ affect detection in mobile devices: a multimodal approach. In *Proceedings of the 2013 Research in Adaptive and Convergent Systems*, pages 454–460. 2013

9. Chowdhury Hasan, Mohammad Adibuzzaman, Ferdaus Kawsar, Munirul Haque, and Sheikh Iqbal Ahamed. Pryguard: a secure distributed authentication protocol for pervasive computing environment. In *International Conference on Industrial, Engineering and Other Applications of Applied Intelligent Systems*, pages 135–145. Springer, Berlin, Heidelberg, 2011

10. Ferdaus A Kawsar, Md Munirul Haque, Mohammad Adibuzzaman, Sheikh Iqbal Ahamed, Md Uddin, Richard Love, David Roe, Rumana Dowla, Tahmina Ferdousy, Reza Selim, et al. e-esas: improving quality of life for breast cancer patients in developing countries. In *Proceedings of the 2nd ACM international workshop on Pervasive Wireless Healthcare*, pages 9–14, 2012

11. Munirul M Haque, Ferdaus Kawsar, M Adibuzzaman, SI Ahamed, R Love, R Dowla, D Roe, and R Salim. Mobile based health care solution for breast cancer patients. *Proceedings of M4D 2012 28-29 February 2012 New Delhi, India*, 28(29):23, 2012

12. Mohammad Adibuzzaman, Colin Ostberg, Sheikh Ahamed, Richard Povinelli, Bhagwant Sindhu, Richard Love, Ferdaus Kawsar, and Golam Mushih Tanimul Ahsan. Assessment of pain using facial pictures taken with a smartphone. In *2015 IEEE 39th Annual Computer Software and Applications Conference*, volume 2, pages 726–731. IEEE, 2015

13. Golam MT Ahsan, Md O Gani, Md K Hasan, Sheikh I Ahamed, William Chu, Mohammad Adibuzzaman, and Joshua Field. A novel real-time non-invasive hemoglobin level detection using video images from smartphone camera. In *2017 IEEE 41st Annual Computer Software and Applications Conference (COMPSAC)*, volume 1, pages 967–972. IEEE, 2017

Methods

1. Chih-Hao Fang, Ananth Grama, Paul Griffin, Fatemeh Rouzbeh, and Mohammad Adibuzzaman. Optic: Optimal treatment policy using reinforcement learning and structural causal model. *Under review*

2. Riddhiman Adib, Sheikh Iqbal Ahamed, Paul Griffin, and Mohammad Adibuzzaman. A causally formulated hazard ratio estimation through backdoor adjustment on structural causal model. *Machine Learning for Healthcare*, 2020

3. Amber M Johnson, Mohammad Adibuzzaman, Paul Griffin, and Marvi Bikak. Generating evidence for chronic obstructive pulmonary disease (COPD) clinical guidelines using ehr data. *medRxiv*, page 19006023, 2019

4. Yao Chen, Xiao Wang, Yonghan Jung, Vida Abedi, Ramin Zand, Marvi Bikak, and Mohammad

Adibuzzaman. Classification of short single-lead electrocardiograms (ECGs) for atrial fibrillation detection using piecewise linear spline and XGBoost. *Physiological measurement*, 39(10):104006, 2018

5. Brett Collar, Marvi Bikak, Paul Brown, Zachary Pitluk, and Mohammad Adibuzzaman. Second largest eigenvalue of the transition probability matrix for the Markov chain constructed from the arterial blood pressure waveform is not correlated to shock index in hemorrhagic human subjects. *Aisthesis: Honors Student Journal*, 9(1):37–43, 2018

6. Mohammad Adibuzzaman, David Strauss, Stephen Merrill, Loriano Galeotti, and Christopher Scully. Evaluation of machine learning algorithms for multi-parameter patient monitoring., 2014

7. Mohammad Adibuzzaman, George C Kramer, Loriano Galeotti, Stephen J Merrill, David G Strauss, and Christopher G Scully. The mixing rate of the arterial blood pressure waveform markov chain is correlated with shock index during hemorrhage in anesthetized swine. In *2014 36th Annual International Conference of the IEEE Engineering in Medicine and Biology Society*, pages 3268–3271. IEEE, 2014

Clinical Applications

1. Ayesha Khan, Vida Abedi, Farhan Ishaq, Alireza Sadighi, Mohammad Adibuzzaman, Martin Matsumura, Neil Holland, and Ramin Zand. Fast-track long term continuous heart monitoring in a stroke clinic: A feasibility study. *Frontiers in Neurology*, 10:1400, 2019

2. M Bikak, R Adib, W Ingram, P Griffin, and M Adibuzzaman. Outcomes of use of antipsychotic for delirium in the ICU: A big data approach. In *Critical Care: The Metamorphosis-Pain, Sedation, Delirium, ICU-Acquired Weakness, and Palliative Care*, pages A6672–A6672. American Thoracic Society, 2019

3. Marvi Bikak, Amber Johnson, and Mohammad Adibuzzaman. Application of markov modeling to assess outcomes in COPD. *Chest*, 156(4):A152, 2019

4. M Bikak, M Adibuzzaman, Y Jung, Y Yih, and E Bareinboim. Regenerating evidence from landmark trials in ards using structural causal models on electronic health record. In *Critical Care: Big Data in Health Care-Predictive Analytics, Clinical Decision Support, And Rapid Response*, pages A4290–A4290. American Thoracic Society, 2018

5. Mina Ostovari, Denny Yu, Shan Xie, Qing Ye, Bhagyashree Katare, Mohammad Adibuzzaman, Kenneth J Musselman, Roshanak Nateghi, Cleveland G Shield, and Yuehwern Yih. Bridging the gap between population needs and barriers into onsite clinic use. In *Proceedings of the Human Factors and Ergonomics Society Annual Meeting*, volume 60, pages 1809–1812. SAGE Publications Sage CA: Los Angeles, CA, 2016

6. Richard Reed Love, Tahmina Ferdousy, Bishnu D Paudel, Shamsun Nahar, Rumana Dowla, Mohammad Adibuzzaman, Golam Mushih Tanimul Ahsan, Miftah Uddin, Reza Salim, and Sheikh Iqbal Ahamed. Symptom levels in care-seeking bangladeshi and nepalese adults with advanced cancer. *Journal of global oncology*, 3(3):257–260, 2017

TALKS

Regenstrief Artificial Intelligence Conference, Indianapolis, USA 06/03/2020

Big Data in Health Sciences

Discovery Park Convergence Conference, Purdue University, USA 11/10/2019

LATICE: Framework for Longitudinal Analysis of Time-Course Data from Patient Generated Health Data

Hamad Bin Khalifa University, Doha, Qatar, Guest lecturer (online) 04/09/2019

Big Data in Health Sciences

Society of Critical Care Medicine (SCCM) 48th Critical Care Congress, San Diego, California 02/17/2019

Methods for Quantifying Efficacy-Effectiveness Gap of Randomized Controlled Trials: Examples in ARDS

Extremely Large Database (XLDB), Stanford University, USA 04/30/2018

Big Data in the Intensive Care Unit

AMIA Webinar 08/17/2017

An Open-access High Performance Computing System for Developing Research Applications (Apps)

EMBC 2014 Engineering in Medicine and Biology, Chicago, Illinois 08/26/2014

Closing the Data Loop: An Integrated Open Access Analysis Platform for the MIMIC Database

Computing in Cardiology, Vancouver, Canada 09/12/2016

A Novel Index to Monitor Physiological Systems from the Arterial Blood Pressure Waveform during Hemorrhage

US Food and Drug Administration (US FDA), Division of Biomedical Physics, White Oak, Maryland 08/12/2014

Evaluation of Machine Learning Algorithms for Multi-parameter Patient Monitoring

MENTORING (PH.D. STUDENTS)

Yonghan Jung Fall 2017- Current

Ph.D. Candidate (Computer Science), Advisor Elias Barienboim

Fatemeh Rouzbeh Fall 2018–Current

Ph.D. Candidate (Computer Science), Advisor Ananth Grama)

Mobasshir Arshed Naved Fall 2019–Current

Ph.D. Candidate (Industrial Engineering), Advisor Paul Griffin

Chih-Hao Fang Fall 2019–Current

Ph.D. Candidate (Computer Science), Advisor Ananth Grama

Riddhiman Adib Fall 2018–Current

Ph.D. Candidate (Computer Science, Marquette University), Advisor Sheikh Iqbal Ahamed)

Brett Meyers Fall 2018–Current

Ph.D. Candidate (Mechanical Engineering), Advisor Pavlos Vlachos)

Amber Johnson Fall 2017– Summer 2019

(Ph.D. (Computer Science), Advisor Bharat Bhargava)

Yao Chen Fall 2017– Summer 2018

Yao Chen (Ph.D. Candidate (Statistics), Advisor Xiao Wang)

RESEARCH SUPPORT

Leading Edge Acceleration Projects (LEAP) in Health Information Technology, Office of the National Coordinator for Health Information Technology, U.S. Department of Health and Human Services Pending

Collaborative Cloud Computing Ecosystem for Research with Health Data. (Role-PI)

Multimodal Sensor Systems for Precision Health Enabled by Data Harnessing, Artificial Intelligence, and Learning (SenSE) Pending

SenSE: Adaptive Sensing, Cooperative Analysis, Interpretable Learning, and Control for Medication Surveillance. (Role-coPI)

Grand Challenges in Neuroscience Grant 11/01/2019-10/30/2019

Data-science infrastructure for precision auditory neuroscience. The seed project is to establish infrastructure and protocols for the rapid accumulation of harmonized multidisciplinary cross-species data for precision auditory neuroscience, including an Audiology Diagnostics Core for human subjects. (Role-coPI)

Indiana Family and Social Services Administration (FSSA) 01/01/19–present

Addressing Opioid Crisis and Long Term Care Cost in the State of Indiana. ($12M) (Role: I)

Discovery Park Integrative Data Science Initiative, Purdue University 06/01/19–05/30/2020

Causally-driven Healthcare Science From Observational and Experimental Studies to Personalized and Improved Patient Outcomes. ($265,000) (Role: PI)

University Core Facility Research Equipment Program, Purdue University 03/01/18

Regenstrief Information Commons: A Cloud Computing Infrastructure for Reproducibility and Shareability. ($100,000) (Role: Co-PI)

Regenstrief Center for Healthcare Engineering (RCHE) 05/01/17– present

Identifying Causation from Observational and Experimental Data. (Role: PI)