Riddhiman Adib, Ph.D.

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Github Profile: github.com/adib2149

- *Postdoctoral researcher with 5+ years of research experience in Machine Learning and Data Science for healthcare.*
- *Specializing in Causal Inference, A/B Testing (Experiment design), Bioinformatics, Electronic Healthcare Datasets, and Mobile Health.*

EDUCATION

Marquette University — **Milwaukee, WI**
Ph.D. in Computer Science *(GPA: 3.96/4.0)* — *Aug 2017 - May 2022*
- ***Ph.D. Dissertation Title:*** Causal Inference in Healthcare: Approaches to Causal Modeling and Reasoning through Graphical Causal Models

Marquette University — **Milwaukee, WI**
Masters in Computing (Specialization: Big Data & Data Analysis) *(GPA: 3.96/4.0)* — *Aug 2017 - May 2020*
- ***Relevant Courses:*** Advanced Machine Learning, Advanced Data Science, Introduction to Intelligent Systems, Social and Ethical Implications of Data

Bangladesh University of Engineering and Technology — **Dhaka, Bangladesh**
Bachelor of Science in Electrical & Electronics Engineering *(GPA: 3.32/4.0)* — *May 2010 - Sep 2015*

PROFESSIONAL EXPERIENCE

Oregon Health & Science University, Oregon Clinical & Translational Research Institute — **Portland, OR**
Informatics Postdoctoral Scholar — *Jun 2022–Present*
- ***Causal Inference:*** Contributing in two (2) NIH research proposals and five (5) publication submissions, involving causal model generation and effect estimation from observational healthcare data
- ***Bioinformatics & Bioethics:*** Research aid in three (3) NIH research proposals, involving bioethics, PHI management, ontology and citizen science for healthcare

Purdue University, Regenstrief Centre for Healthcare Engineering — **West Lafayette, IN**
Visiting Scholar (Summer Research Intern) — *Summer 2019*
- ***Causal Inference:*** Generation of underlying structural causal model from observational dataset on Delirium patients in ICU, through application of multiple causal structure learning algorithms

Marquette University, Ubicomp Lab — **Milwaukee, WI**
Graduate Assistant — *Aug 2017–May 2022*
- ***Research Assistant*** *(Jun. 2018 - May 2021)*: Two (2) mHealth projects with app development and project management
- ***Teaching Assistant*** *(Aug. 2017 - May 2018, Aug. 2021 - May 2022)*: Aided as TA in following courses - Calculus 1, Calculus 2, Programming Languages & Introduction to Programming

Harriken.com Limited — **Dhaka, Bangladesh**
Software Engineer — *Oct 2015–May 2017*
- ***Android Lead*** *(Apr. 2016 - May. 2017)*: Design, planning, & deployment of restaurant-discovery Android app
- ***Software Developer*** *(Oct. 2015 - Mar. 2016)*: Development of restaurant-discovery Android app

SKILLS AND CERTIFICATES

- ***Programming Languages:*** Python *(Most proficient)*, SQL, Java, Matlab
- ***Frameworks and Tools:*** Pandas, Scikit-learn, Do-Why, bnlearn, Android Framework, Django, Cosmos in Epic, AWS
- ***Research Area:*** Causal Inference, A/B Testing, Machine Learning, Data Science, Artificial Intelligence, Bioinformatics,mHealth
- ***Soft Skills:*** Critical thinking, Fast-learning capabilities, Collaboration experiences, Strong interpersonal skill, Multi-tasking
- ***Online Certifications:***
  - PH559x: Causal Diagrams: Draw Your Assumptions Before Your Conclusions (certificate)
  - Neural Networks and Deep Learning (certificate)
  - An Introduction to Interactive Programming in Python (Part 1) (certificate)
  - Programming Mobile Applications for Android Handheld Systems: Part 1 & 2 (certificate)

RESEARCH EXPERIENCE

- ***Causal Inference:***
  - Backdoor adjustment of structural causal models in estimation of Hazard ratio for survival analysis
  - Calculation of causal effects of drug interventions *(anti-psychotic drug intervention on delirium patients in the ICU)*, with Structural causal models, from observational electronic healthcare data
  - Causal graph identification through merging of causal DAGs, generated from data and background knowledge
  - Scientific experiments (Pragmatic clinical trials) through the lens of structural causal models
- ***Bioinformatics & Bioethics:***
  - Curation of targeted population *(around 1400 Delirium patients in the ICU)* and relevant covariates from large electronic healthcare data *(MIMIC-III, about 50k patient healthcare data across multiple diemnsions)* using PostgreSQL
  - Consent management for application of patient/consumer-powered health data and its legal & ethical perspective
  - Extraction of targeted population subgroup *(rare disease patient population)* from Epic Cosmos *(largest Epic maintained healthcare dataset, with ~1B patient population in the USA)*
  - Usage of medical Ontology *(SNOMED CT)* in generating evidence for hypothesis building, through Causal Inference
- ***Broader AI & ML:***
  - Exploration on Twitter text dataset of happy moments, and related predictive analysis
- ***mHealth:***
  - Design and development of an mHealth App (myFAMI) for self-management intervention for family members of pediatric transplant recipients
  - Design and development of an electronic peer-mentor support application (iPeer) for improving mental health of Veterans

SELECTED PUBLICATIONS

- Adib, R., Griffin, P., Ahamed, S. I., & Adibuzzaman, M. (2020, September). A causally formulated hazard ratio estimation through backdoor adjustment on structural causal model. In Machine Learning for Healthcare Conference. PMLR. (link)
- Adib, R., Gani, M. O., Ahamed, S. I., & Adibuzzaman, M. (2022). Causal Discovery on the Effect of Antipsychotic Drugs on Delirium Patients in the ICU using Large EHR Dataset. arXiv preprint arXiv:2205.01057. *(Under review in J-BHI)* (link)
- Adib, R., Naved, M. M. A., Fang, C. H., Gani, M. O., Grama, A., Griffin, P., ... & Adibuzzaman, M. (2022). CKH: Causal Knowledge Hierarchy for Estimating Structural Causal Models from Data and Priors. arXiv preprint arXiv:2204.13775. *(Under review in CLeaR 2023)* (link)
- Adib, R., Ahamed, S. I., & Adibuzzaman, M. (2022). Pragmatic Clinical Trials in the Rubric of Structural Causal Models. arXiv preprint arXiv:2204.13782. (link)
- Adib, R., Aldawod, E., Lang, N., Lasswell, N., & Guha, S. (2019, July). Analyzing Happiness: Investigation on Happy Moments using a Bag-of-Words Approach and Related Ethical Discussions. In 2019 IEEE 43rd Annual Computer Software and Applications Conference (COMPSAC). IEEE. (link)
- Adib, R., Das, D., Ahamed, S. I., & Lerret, S. M. (2022). An mHealth App-Based Self-management Intervention for Family Members of Pediatric Transplant Recipients (myFAMI): Framework Design and Development Study. JMIR nursing. (link)
- Roushan, T., Adib, R., Johnson, N., George, O., Hossain, M. F., Franco, Z., ... & Ahamed, S. I. (2019, July). Towards predicting risky behavior among veterans with PTSD by analyzing gesture patterns. In 2019 IEEE 43rd Annual Computer Software and Applications Conference (COMPSAC). IEEE. (link)

OPEN-SOURCE CONTRIBUTIONS

- **BottomNavBar** ***(207 Github stars)***:
  Open-source Android library to add bottom navigation bar to application (url: https://github.com/adib2149/BottomNavBar)
- **FormMaster** ***(156 Github stars)***:
  Open-source Android library to easily build and use larger forms (url: https://github.com/adib2149/FormMaster)

SERVICES AND CO-CURRICULUR

- ***Program committee member*** and ***peer reviewer*** for multiple conferences
  - AAAI '23, UAI '22-'21, AISTATS '22, ACM CHIL '22, AMIA '22-'20, COMPSAC '22-'21, and few more
- ***Student volunteer*** at NeurIPS '20
- ***Invited talk*** on 'Introduction to Causal Inference' for course 'Machine Learning Principles', Spring 2021 at Marquette University

LEADERSHIP AND ACCOMPLISHMENTS

- ***General Secretary***, BUET Film Society *(Oct 2014 - May 2015)*
- ***Marquette Computer Science Summer Research Fellow*** *(Summer 2021)*