**Abdelrahman Hosny  
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| **Summary** I try to optimize every process I encounter. In other words, my job is to find ways to do existing tasks in a more (sometimes dramatically) efficient way. To that end, I study the role of historical data in making better optimization decisions. |

**Education**2018-Present ***PhD*** – Computer Science, Brown University, Providence, RI.  
 Interests: Constrained Optimization, Machine Learning; Learning to Optimize (L2O).  
2019-2020 ***Visiting Graduate Student*** – Computer Science and Engineering, UCSD, San Diego, CA.  
2015-2016 ***Master’s*** – Computer Science and Engineering, University of Connecticut, Storrs, CT. GPA: A  
 Thesis: Integrative analysis of heterogeneous genomics data for triple-negative breast cancer and  
 high grade serous ovarian cancer. Online access: <http://masters.abdelrahmanhosny.me>   
2016-2016 ***Graduate Certificate in College Instruction***, a 9-credit program for graduate-level teaching, UConn  
 Teaching Portfolio: <http://teaching.abdelrahmanhosny.me>  
2009-2013 ***Bachelor*** – Computer Science, Assiut University, Egypt. Rank: 1st GPA: 92.51%  
2008-2009 *High School* – Ranked first in Egypt, Math Section. Grade: 99.6%

**Publications Highlight**  
Full profile: [http://scholar.abdelrahmanhosny.me](http://scholar.abdelrahmanhosny.me/)   
  
[2021] ***A Hosny***, M Neseem, S Reda. Sparse Bitmap Compression for Memory-Efficient Training on the Edge. 2021 IEEE/ACM   
 Symposium on Edge Computing (SEC).  
[2021] ***A Hosny***, S Reda. Characterizing and Optimizing EDA Flows for the Cloud. IEEE Transactions on Computer-Aided Design of  
 Integrated Circuits and Systems (TCAD), and Design, Automation and Test in Europe (DATE).  
[2020] E Przybytkowski, T Davis, ***A Hosny***, J Eismann, UA Matulonis, GM Wulf, S Nabavi. An immune-centric exploration of BRCA1  
 and BRCA2 germline mutation related breast and ovarian cancers. BMC Cancer.  
[2020] ***A Hosny***, S Hashemi, M Shalan, S Reda. DRiLLS: Deep Reinforcement Learning for Logic Synthesis. 5th Asia and South  
 Pacific Design Automation Conference (ASP-DAC).  
[2020] ***A Hosny***, AB Kahng. Tutorial: Open-Source EDA and Machine Learning for IC Design: A Live Update. 33rd International  
 Conference on VLSI Design and 2020 19th International Conference on Embedded Systems (VLSID).  
[2019] T Ajayi, VA Chhabria, M Fogaça, S Hashemi, ***A Hosny***, AB Kahng, M Kim, J Lee, U Mallappa, M Neseem, G Pradipta, S Reda,  
 M Saligane, SS Sapatnekar, C Sechen, M Shalan, W Swartz, L Wang, Z Wang, M Woo, B Xu. Toward an open-source digital  
 flow: First learnings from the OpenRoad project. 56th Annual Design Automation Conference 2019 (DAC).  
[2018] F Zare, ***A Hosny***, S Nabavi. Noise cancellation using total variation for copy number variation detection. BMC bioinformatics.  
[2017] F Zare, M Dow, N Monteleone, ***A Hosny***, S Nabavi. An evaluation of copy number variation detection tools for cancer using  
 whole exome sequencing data. BMC bioinformatics.  
[2017] ***A Hosny***, F Zare, S Nabavi. Varsimlab: A Docker-based Pipeline to Automatically Synthesize Short Reads with Genomic  
 Aberrations. 8th ACM International Conference on Bioinformatics, Computational Biology, and Health Informatics.  
[2016] ***A Hosny***, P Vera-Licona, R Laubenbacher, T Favre. AlgoRun: a Docker-based packaging system for platform-agnostic  
 implemented algorithms. Bioinformatics.  
[2016] ***A Hosny***. Integrative Analysis of Heterogeneous Genomics Data for Triple Negative Breast Cancer and High Grade Serous  
 Ovarian Cancer. Master’s Thesis.  
 **Experience**June 2021 – Aug. 2021 ***Research and Software Engineering Intern***, Cadence Design Systems, Remote, Inside USA  
 I worked in the Genus R&D group researching and implementing techniques to improve Physical  
 Layout Estimation (PLE) inside the synthesis engine. I contributed Tcl scripts to the main tool that  
 analyze correlation between a generic PLE model and actual measurements from the downstream  
 flow (P&R). I designed and implemented a GraphNN-based model to improve wire length predictions.  
May 2020 ***Co-founder***, ShipBlu, Cairo, Egypt.  
 I co-founded ShipBlu with the goal of improving a centuries-old industry through machine-learning  
 methods. The last-mile delivery service in Egypt lacks operational efficiency due to many overlooked  
 optimization problems. ShipBlu reimagines core operations using combinatorial optimization  
 methods, topped with machine-learning techniques to learn from existing data.  
June 2019 – Sep. 2019 ***Research Intern***, Microsoft Research, Redmond, WA, USA  
 I worked at the Systems Research Group and Cloud Efficiency. My goal has been to study more  
 efficient solutions that increase datacenters resource utilization and save costs for Azure clients. I  
 worked at the Systems Research Group and Cloud Efficiency. My goal has been to study more efficient  
 solutions that increase datacenters resource utilization and save costs for Azure clients.  
June 2017 – Aug. 2018 ***Research & Development Engineer***, xWARE Integrated Solutions, Assiut, Egypt.  
 I collaborated with the business team to analyze clients’ needs and propose technology solutions to  
 the market needs. In addition, I researched and executed best practices in software development  
 processes. Some of my contributions included: writing well-researched technical proposals that  
 address a specific need; directly interacted with clients and stakeholders to communicate the status of  
 ongoing projects; designed and implemented a DevOps pipeline that improved team productivity and  
 reduced time-to-production releases; led a small software team executing an end-to-end SDLC.  
Jun. 2017 – Aug. 2018 ***Teaching Assistant***, Computer Science, Assiut University, Egypt  
 Courses Taught: Computer Architecture, Programming with Assembly for x86 architectures.  
Jan. 2016 – May. 2017 ***Research Assistant***, Center for Quantitative Medicine, UConn Health, CT, USA  
 I collaborated with an interdisciplinary research team with the goal of advancing quantitative  
 medicine and health care. My role has focused on building support tools and computational platforms  
 for mathematical modeling and simulation of biomedically relevant systems. Some of my  
 contributions included: AlgoPiper: a web-based software that enables building pipelines and  
 workflows of independent computational algorithms through a drag-n-drop graphical user interface;   
 TURING: A crowd-sourced platform for algorithms and analysis pipelines focused on time- and state  
 discrete dynamical systems. It features an easy way for developers to publish their own algorithms  
 and link them with others to create workflows for the analysis and use of systems within mathematics  
 and in applications to other fields such as biology and engineering.  
Jan. 2015-Dec. 2016 ***Teaching Assistant***, Computer Science and Engineering, University of Connecticut, CT, USA  
 Courses: Statistical Analysis of Computer Systems, Algorithms & Complexity.  
Summer 2016 ***Research Intern***, Nabavi Lab, University of Connecticut, CT, USA  
 My role was to develop novel computational methods to identify candidate biomarkers of drug  
 resistant in heterogeneous cancer. I got trained on analyzing large heterogeneous datasets of human  
 DNA and RNA. My work during this internship inspired my Master's thesis project. In addition, I have  
 developed a simulation tool to augment Copy Number Variation (amplifications/deletions) in whole  
 genome sequencing in addition to targeted sequencing.  
Jan. 2015-Dec. 2015 ***Research Assistant***, Center for Hardware Assurance, Security and Engineering, Electrical  
 and Computer Engineering, University of Connecticut, CT, USA  
 I have worked on a Big Data project sponsored by Comcast that analyzes and predicts anomalous user  
 behavior through analytic and learning algorithms. I have utilized different Python packages to build  
 user models and predict anomalies followed by data visualization. I have also used Apache Spark to  
 transform our models into ones that are ready for Big Data analysis (in terms of volume and velocity).  
Summer 2015 ***Research Intern***, Center for Quantitative Medicine, UConn Health, CT, USA  
 I have been the main contributor to [AlgoRun](http://algorun.org/) open source platform. AlgoRun is a Docker-based  
 container template for computational algorithms. Using AlgoRun, we have been able to build  
 [AlgoPiper](http://algopiper.org/) to enable independent software modules and algorithms work together.  
  
Oct. 2013-Dec. 2014 ***Teaching Assistant***, Computer Science, Assiut University, Egypt  
 Courses: Introduction to Object Oriented Programming using Java, Compilers Theory  
Summer 2012 ***Software Engineering Intern***, ITWorx, Cairo, Egypt  
 Project: School Management System using Microsoft SharePoint technology.  
 I learned Microsoft SharePoint technology, and developed an automated solution for a reporting  
 system using .NET with SharePoint 2010.

**Honors and Awards**2019 Richard Newton Young Student Fellowship, Design Automation Conference (DAC’19), Las Vegas, NV, USA  
2015 UConn Graduate Student Intern of the Year Honorable Mention, University of Connecticut, USA  
2013 Top 10 Debaters Medal and Award, 2nd International Universities Arabic Debating Championship, Al Doha, Qatar  
2010 One of Top 10 Math Competitors, AUC Math Competition, Cairo, Egypt.  
2009 Coca-Cola Education Award, Assiut Governorate shield, Assiut Municipal Council shield  
 Teachers Association in Assiut shield

**Community**   
2022 External Reviewer, IEEE Transactions on Computer Aided Design  
2021 External Reviewer, IEEE Transactions on Computer Aided Design  
2020 External Reviewer, IEEE Design and Test   
2019 – 2020 External Reviewer, AMIA 2019 Annual Symposium  
2010 – Present A student member in IEEE and ACM

**Featured Projects**Full Portfolio: <https://github.com/abdelrahmanhosny?tab=projects> 2019 DRiLLS – Brown University.   
 A Deep Reinforcement Learning Framework for Logic Synthesis [link: <https://github.com/scale-lab/DRiLLS>]  
2018 OpenROAD Flow – Brown University funded by DARPA  
 A cloud-based application to run a fully automated hardware design flow [link: <https://theopenroadproject.org/>]  
2017 MeSHgram – NCBI Hackathon, NLM, NIH, Washington DC [link: <https://github.com/NCBI-Hackathons>]  
 A web-based tool to visually browse co-occurrence of MeSH terms in PubMed.  
2016 *Integrative Analysis of heterogeneous genomics data for TNBC,* Master’s Thesis  
 Identifying candidate biomarkers for drug resistance in heterogeneous breast cancer data.   
2016 *CNV-Sim*, main contributor [link: <https://nabavilab.github.io/CNV-Sim>]  
 Simulating copy number variations in whole genome and targeted sequencing.  
2016 *TURING*, main contributor [link: <http://www.discretedynamics.org/>]  
 A crow-sourced platform for algorithms focused on time- and state-discrete dynamical systems.  
2016 *AlgoPiper*, main contributor [link: <http://algopiper.org/>]  
 A visual tool to create pipelines based on AlgoRun packaging system.  
2016 *Deep learning models on Saccharomyces Cerevisiae*, main contributor  
 [link: <http://abdelrahmanhosny.github.io/DL-Cerevesiae/>]  
 Confirming DNA origins of replication in Cerevisiae genome using deep learning models.  
2015 *AlgoRun*, main contributor [link: <http://algorun.org/>]  
 A Docker-based packaging system for platform-agnostic implemented algorithms.  
  
**Conferences and Certification**  
January 2020 *Presenter*, ASP-DAC’20, Beijing, China  
January 2020 *Tutorial Speaker*, VLSID’20, Bangalore, India  
August 2017 *Presenter,* ACM BCB’17, Boston, MA.  
April 2016 *Speaker* at Docker Boston Meetup. Talk link: <http://bit.ly/algorun-talk>   
March 2016 *Mentor* at Docker Birthday #3, Boston, MA  
January 2013 International Software Testing Qualifications Board (ISTQB) – Foundation

**Volunteering**Feb. 2016 - May 2017 *Webmaster* at IEEE Connecticut Section  
 Activities: maintain and update all website content of IEEE CT Section.  
November 2013 *Team Coach* at ACM Arab Collegiate Programming Contest (ACPC), Egypt  
 Activities: mentored a team of programmers to solve programming challenges  
Aug. 2012 - May 2013 *Microsoft YouthSpark Leader*, Microsoft Citizenship, Egypt  
 Activities: planned social projects that promote entrepreneurship  
Jan. 2011 - May 2013 *Microsoft Student Partner* at Microsoft Egypt  
 Activities: founded and lead Microsoft tech-club at Assiut University  
 delivered technical sessions evangelizing Microsoft technologies  
 contributed to Microsoft Windows 8 Launch in Egypt  
 competed in Microsoft Imagine Cup 2012  
Aug. 2011 - May 2012 *President*, Alashanek Ya Balady for Sustainable Development, Assiut Franchise  
 Activities: started R&D processes to support poor people in the city  
 formulated youth development and micro loans programs  
Aug. 2010 – May 2011 *Scientific Committee Head*, Student Union, Faculty of Computers & Information  
 Activities: contributed to a country-wide conference for CS students.  
 delivered technical sessions about web development

Last Updated: June 2022  
Download the latest update of my CV at:  
<http://cv.abdelrahmanhosny.me>