

# MUHAMMAD SAAD SHAMIM

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## EDUCATION

Baylor College of Medicine & Rice University, Houston, TX      Expected Graduation: May 2024  
Medical Scientist Training Program (M.D./Ph.D.)  
Rice University, Houston, TX      Graduated: May 2014  
B.S. Computer Science | Biochemistry and Cell Biology Minor  
B.A. Computational and Applied Mathematics & Cognitive Sciences

## EXPERIENCE

Bioinformatics Programmer, The Center for Genome Architecture, Houston, TX      2014 – 2016  
Visiting Researcher, Broad Institute of MIT and Harvard, Cambridge MA      2014 – 2016  
DOE SULI Intern, Oak Ridge National Laboratory, Oak Ridge, TN      2012

## PUBLICATIONS

Suhas S.P. Rao, Su-Chen Huang, Brian Glenn St. Hilaire, Jesse M. Engreitz, Elizabeth M. Perez, Kyong-Rim Kieffer-Kwon, Adrian L. Sanborn, Sarah E. Johnstone, Gavin D. Bascom, Ivan D. Bochkov, Xingfan Huang, **Muhammad S. Shamim**, Jaeweon Shin, Douglass Turner, Ziyi Ye, Arina D. Omer, James T. Robinson, Tamar Schlick, Bradley E. Bernstein, Rafael Casellas, Eric S. Lander, Erez Lieberman Aiden. “Cohesin Loss Eliminates All Loop Domains.” *Cell* (2017): 305–320.  
Douglas H. Phanstiel\*, Kevin Van Bortle\*, Damek V. Spacek, Gaelen T. Hess, **Muhammad S. Shamim**, Ido Machol, Michael I. Love, Erez Lieberman Aiden, Michael C. Bassik, Michael P. Snyder. “Static and Dynamic DNA Loops form AP-1-Bound Activation Hubs during Macrophage Development.” *Molecular Cell* (2017): 1037–1048.  
Olga Dudchenko, Sanjit S. Batra\*, Arina D. Omer\*, Sarah K. Nyquist, Marie Hoeger, Neva C. Durand, **Muhammad S. Shamim**, Ido Machol, Eric S. Lander, Aviva Presser Aiden, Erez Lieberman Aiden. “De novo assembly of the *Aedes aegypti* genome using Hi-C yields chromosome-length scaffolds.” *Science* (2017): 92-95.  
Neva C. Durand\*, **Muhammad S. Shamim\***, Ido Machol, Suhas S.P. Rao, Miriam H. Huntley, Eric S. Lander, and Erez Lieberman Aiden. “Juicer Provides a One-Click System for Analyzing Loop-Resolution Hi-C Experiments.” *Cell Systems* 3 (2016): 95-98.  
Neva C. Durand\*, James T. Robinson\*, **Muhammad S. Shamim**, Ido Machol, Jill P. Mesirov, Eric S. Lander, and Erez Lieberman Aiden. “Juicebox Provides a Visualization System for Hi-C Contact Maps with Unlimited Zoom.” *Cell Systems* 3 (2016): 99-101.  
Emily M. Darrow, Miriam H. Huntley, Olga Dudchenko, Elena K. Stamenova, Neva C. Durand, Zhuo Sun, Su-Chen Huang, Adrian L. Sanborn, Ido Machol, **Muhammad Shamim**, Andrew P. Seberg, Eric S. Lander, Brian P. Chadwick, Erez Lieberman Aiden. “Deletion of DXZ4 on the human inactive X chromosome alters higher-order genome architecture.” *PNAS* (2016): 4504–4512.  
Jennifer Young, Sevtap Ozisik, Beatrice Riviere, and **Muhammad Shamim**. “A comprehensive mathematical framework for modeling intestinal smooth muscle cell contraction with applications to intestinal edema.” *Mathematical Biosciences* 262 (2015): 206-213.

## PATENT PENDING

**Muhammad Saad Shamim**, Suhas Surya Pilibail Rao, Ido Machol, and Erez Lieberman Aiden. “Altered Vision via Streamed Optical Remapping.” PCT US2015/048150.

## HONORS AND AWARDS

Vice Chair, Public Relations, American Physician Scientists Association      2017 – Present  
Invited Speaker, Bio-IT World Conference & Expo, Cambridge Innovation Institute      2017

Institutional Representative (BCM), American Physician Scientists Association	2017 – Present
NASA Prize, TMCx Global Health Hackathon	2015
Reality Hacker VR App Recognition (IamCardboard VR Blog)	2015
Top Ten Must-Have Apps for Google Cardboard	2015
Top Five Unique VR Apps	2015
NCEMSF Video of the Year ( <a href="http://bit.ly/1H8GVkZ">bit.ly/1H8GVkZ</a> )	2014
Rice University Outstanding Senior Award	2014
Rice University Spirit of Service Award	2014
Baker College Fellow	2014
NCEMSF Website of the Year	2014
Hamner Engineering Scholarship	2013
Baker College Outstanding Service Award	2013
Baker College Society of Academic Mentors	2012 – 2014
Rice University VIGRE Ambassador	2012 – 2013
Memorial Hermann Volunteering Scholarship	2011
National Merit Scholar, National AP Scholar	2010

### **PRESENTATIONS**

- Muhammad Saad Shamim.** “Journey to the Center of the Nucleus: Exploring 3D Genomic Datasets with Juicebox.” Bio-IT World Conference & Expo (Peer-Reviewed Talk). Boston, MA. May 2017.
- Sayan Bhattacharya and **Muhammad Shamim.** “The HathiTrust+Bookworm Project as a Model for Collaborative Research at Large Scale” in the panel “Developing and Sustaining Collaborative Research in the Humanities.” 131st Annual Convention of the Modern Language Association (Peer-Reviewed Talk). Austin, TX. January 2016.
- Muhammad Saad Shamim.** “Quantifying Cultural Trends: Big Data and Society.” Andrew W. Mellon Graduate Research Seminar – “The Quantified Self: A Techno-Human Experiment” at Rice University (Invited Lecture). Houston, TX. January 2016.
- Muhammad Saad Shamim.** “New Frontiers in Biological Data Visualization.” University of St. Thomas Bioinformatics Colloquium (Invited Lecture). Houston, TX. October 2015.
- Muhammad Saad Shamim.** “Culturomics: New Developments in Analyzing Digitized Texts.” Rice University Digital Humanities Group (Invited Lecture). Houston, TX. November 2015.
- Muhammad Saad Shamim.** “The Future of Human Vision: Preferential Augmentation Using GPUs.” GPU Technology Conference (Peer-Reviewed Talk). San Jose, CA. March 2015.
- Grace Apfeld, Elizabeth Binswanger, Gregory Kamback, and **Muhammad Saad Shamim.** “Virtual Reconstruction of Historical Cities: Songo Mnara UNESCO Site.” Chevron Visualization Laboratory (Talk). Houston, TX. May 2014.
- Muhammad Shamim** and Pakorn Wongwaitayakornkul. “A Non-Invasive Diagnostic Tool for Cardiac Pressure Gradients.” Rice Computational & Applied Mathematics (Talk). Houston, TX. May 2014.
- Pakorn Wongwaitayakornkul and **Muhammad Shamim.** “A Non-Invasive Diagnostic Tool for Cardiac Pressure Gradients.” Rice Engineering Design Showcase (Poster). Houston, TX. May 2014.
- Muhammad Shamim** and Jennifer Young. “A Comprehensive Mathematical Framework for Modeling Intestinal Smooth Muscle Cell Contraction with Applications to Intestinal Edema.” Society for Mathematical Biology (Poster Session). Knoxville, TN. July 2012.
- Muhammad Shamim,** Cory Hauck, and Yulong Xing. “A Discontinuous Galerkin Method for the  $M_1$  Model of Radiative Transfer.” Oak Ridge National Laboratory (Poster Session). Oak Ridge, TN. August 2012.
- Muhammad Shamim** and Jennifer Young. “A Comprehensive Mathematical Framework for Modeling Intestinal Smooth Muscle Cell Contraction with Applications to Intestinal Edema.” Society for Mathematical Biology (Conference Poster). Knoxville, TN. July 2012.

## **CERTIFICATIONS AND MEMBERSHIPS**

Bioinformatics Curator, OMICtools – omicX LLC	2016 – Present
Participant, NSF Neural & Cognitive Systems Workshop	2016
Member, American Physician Scientists Association	2016 – Present
Member, Rice Engineering Alumni Association	2016 – Present
Interviewer, Rice Alumni Volunteers for Admission (RAVA)	2015 – 2017
BLS Training Center Faculty, UTHSC – American Heart Association	2013 – 2014
Member, National Collegiate EMS Foundation	2013 – 2014
EMT Delegate, Texas Medical Association First Tuesday Event	2013
BLS Instructor, American Heart Association	2012 – Present
BLS Provider (CPR/First Aid), American Heart Association	2012 – Present
Co-Founder, Chair, Rice University Muslim Alumni Group	2012 – 2016
EMT-Intermediate, Texas Department of State Health Services	2012 – 2016
Advanced EMT, National Registry of EMTs	2012 – 2016
Member, Society for Mathematical Biology	2012 – 2013
Computer Science Club	2011 – 2014
Euler Math Club	2011 – 2012
Muslim Student Association	2010 – 2014

## **CLINICAL EXPERIENCE**

Internal Medicine Preceptorship, Michael E. DeBakey VA Medical Center	2017 – Present
Nephrology Preceptorship, Memorial Hermann Southwest Hospital	2016 – 2017
Ben Taub Hospital Emergency Department Rotations	2013 – 2014
Harris County Emergency Corps (Reserve EMT)	2012 – 2014
Rice University Emergency Medical Services	2012 – 2016
Reserve Lieutenant	2014 – 2016
Lieutenant, InCharge	2012 – 2014
Clinical Shifts (Ben Taub Hospital, Texas Children's Hospital)	2011 – 2012
Memorial Hermann – Texas Medical Center (Volunteer)	2010 – 2011

## **TEACHING EXPERIENCE**

Research Mentor, The Center for Genome Architecture	2015 – Present
Rice Code College, Rice Engineering Alumni Association	2015 – 2016
Mentor, OwlEyes VR ENGI Team	2015
Rice Senior Interviewer	2013 – 2014
Baker College Academic Mentor, Rice University	2012 – 2014
Rice University Emergency Medical Services	2012 – 2017
Preceptor	2014 – 2016
Field Training Officer	2013 – 2014
Basic Life Support Instructor	2012 – 2017
Education Advisory Committee	2012 – 2014
Grader (CAAM 335: Matrix Analysis), Rice University	2012
Teaching Assistant (CAAM 210: Intro to Computational Engineering)	2011 – 2014

## **ANDROID APPS**

- Muhammad Saad Shamim** and Erez Lieberman Aiden. Reality Hacker VR.  
Android App. Google Play. 145,000+ Downloads.
- Muhammad Saad Shamim**, Ido Machol, and Erez Lieberman Aiden. Juicebox VR.  
Android App. Google Play. 1,500+ Downloads.
- Marie Hoeger, **Muhammad Saad Shamim**, and Erez Lieberman Aiden. inVRted Series.  
Android App. Google Play. 1,300+ Downloads.

Marie Hoeger, **Muhammad Saad Shamim**, and Erez Lieberman Aiden. marsroVR Series.  
Android App. Google Play. 600+ Downloads.

### **TECHNICAL SKILLS**

Experience programming in MATLAB, C, C#, C++, JAVA, FORTRAN, Python, Mathematica,  
JavaScript, AWK, and HTML/JS/CSS

Experience with technical software: AMPL, LaTeX, AutoCAD, Autodesk Inventor, Autodesk Revit, NI  
Multisim, Blender, and Unity

Fluent in Urdu (Hindi) and elementary proficiency in Arabic and Spanish