






Marissa D'Souza

Medical Student

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 Savannah, GA

EDUCATION

Doctor of Medicine

Mercer University School of Medicine (MUSM)

08/2017 – 05/2021

Bachelor of Science in Computer Science

Georgia Institute of Technology (GT) | Concentrations: **People** x **Media**

08/2013 – 05/2017

Magna Cum Laude

- ▶ Designed, built, and evaluated systems that treat the human as the central component in order to exploit computing's abilities to provide creative outlets
- ▶ Selected to partake in GT "**Grand Challenges**" — a four-year curricular program and living community designed to foster problem-solving, leadership, and entrepreneurship in students wishing to tackle major global problems

HONORS & AWARDS

Jocelyn A. Rankin Student Excellence in Library Research Award Honorable Mention

05/2019

American Association of Neurological Surgeons Medical Student Summer Research Scholarship

05/2018 – 08/2018

Georgia Institute of Technology Dean's List

05/2013 – 05/2017

LEADERSHIP EXPERIENCE

MUSM Liaison Committee on Medical Education (LCME) Steering Committee

01/2020 – Present

Member

MUSM

- ▶ Collaborating with the Deans of the medical school to oversee the school's compliance with various LCME Accreditation Standards
- ▶ Overseeing the writing of the school's LCME Institutional Self-Study report, incorporating both objective and subjective data into each of its the individual sections
- ▶ Communicating with students on each of the individual MUSM LCME subcommittees to ensure proper collaboration across campuses and classes

MUSM LCME Independent Student Analysis (ISA) Committee

05/2019 – Present

Chair

MUSM

- ▶ Overseeing the ISA Committee — a group of students tasked with assessing, commending, and critiquing the medical education program at MUSM
- ▶ Distributed and analyzed a Qualtrics survey to the MUSM student body, achieving a 98.1% response rate with 471 out of 480 students completing to the survey
- ▶ Co-authored the "Independent Student Analysis", a 100+ page document that outlined both strengths and weaknesses of the school along with suggestions to address major student concerns
- ▶ Catalyzing change and devising solutions within areas of MUSM that require major reform

Student Council

05/2019 – Present

Student Body President | Savannah Campus

MUSM

- ▶ Serving as the liaison between the student body and faculty/administration of the Savannah campus
- ▶ Overseeing student participation within the various Interest Groups and faculty committees on campus
 - ▶ Creating agendas and slides for monthly Student Council meetings
 - ▶ Leading the monthly Steering Committee meetings
 - ▶ Helping organize MUSM's annual Residency Fair
 - ▶ Elected student membership to a new Quality Improvement Committee on campus

Student Council

04/2018 – 05/2019

Student Body Secretary

MUSM

General Surgery Interest Group

Vice President

04/2018 – 05/2019
MUSM**Phi Delta Epsilon International Medical Fraternity, Inc. | Epsilon Mu Chapter**

Vice President of Recruitment

12/2017 – 12/2018
MUSM**Student Council**

Class Secretary

12/2017 – 04/2018
MUSM**Multicultural Greek Council (MGC)**

Executive Vice President

01/2015 – 12/2015
GT**Sigma Sigma Rho Sorority, Inc. | Nu Chapter**

Vice President of Communications, Philanthropy Chair

01/2014 – 12/2015
GT**Biomedical Engineering Society**

Secretary

01/2014 – 05/2015
GT**RESEARCH & WORK EXPERIENCE****MUSM Peer-to-Peer Tutoring Program**

Preclinical Tutor

08/2019 – Present
Savannah, GA

- ▶ Individually tutoring five M1 students in both subject material and test-taking strategies, with over 30 hours logged to date
- ▶ Led two group review sessions over topics in neurology and nephrology to help students prepare for their end-of-block exams

Department of Neurosurgery | Stanford University School of Medicine

AANS Medical Student Summer Research Scholar

05/2018 – Present
Stanford, CA

- ▶ **Coordinated Resect-Deep Brain Stimulation (CR-DBS) for the Treatment of Binge Drinking Disorder**
 - ▶ Establishing a novel mice model for the treatment of binge-drinking disorders using CR-DBS in the [Halpern-Malenka Lab](#)
 - ▶ Utilizing neural signaling toolboxes within MATLAB to characterize an electrophysiological marker within the nucleus accumbens that precedes the onset of binge-drinking behaviors
 - ▶ Determining the threshold success rate and cost that DBS would require in order to be the preferred mode of treatment for alcohol abuse disorders
- ▶ **Effect of Skull Density Ratio on MRI-Guided High Intensity Focused Ultrasound for the Treatment of Essential Tremor**
 - ▶ Collaborated with Dr. Pejman Ghanouni, Director of the Stanford Focused Ultrasound Center of Excellence, and Dr. Casey Halpern, Director of Epilepsy Surgery, along with other academic neurosurgeons around the world to author a manuscript detailing the effect of skull density ratio on the efficacy, efficiency, and safety of Focused Ultrasound for the treatment of patients with essential tremor

Department of Surgery | Memorial Health University Medical Center

Research Assistant

12/2017 – Present
Savannah, GA

- ▶ **Implementation of an Enhanced Recovery after Surgery (ERAS) Protocol for Laparoscopic Procedures: A Prospective Study on Post-Operative Outcomes**
 - ▶ Working with residents of the General Surgery program on a quality improvement project to study the effect of an early discharge protocol on 30-day postoperative outcomes
- ▶ **Surgical Care from the Rural Patient's Perspective**
 - ▶ Collaborated with Dr. Christopher Senkowski, Program Director and Chair of the General Surgery program, to plan a patient-centered conference in order to facilitate discussions between patients and medical professionals regarding experiences before, during, and after surgical procedures
 - ▶ Submitted a grant to the Patient-Centered Outcomes Research Institute under the Engagement Award Research Meeting and Conference Support Grant

Johns Creek Tennis Academy

Tennis Instructor

05/2011 - Present
Johns Creek, GA

- ▶ Coaching adult tennis leagues and youth private lessons over holidays and break time
- ▶ Obtained a Professional Tennis Registry certification to coach individuals aged 17 and younger
- ▶ Instructed 50+ kids aged 5-15 the technique, rules, and good behaviors needed for success on the tennis court over the course of multiple summers from 2011 to 2014

Georgia Tech Cognitive Neuro Motor Control Lab & Shepherd Center

01/2015 – 05/2017
Atlanta, GA

Research Assistant

▶ Effect of Spinal Cord Injury on Force Modulation

- ▶ Examined differences in force modulation between healthy adults and adults with spinal cord injury in order to come up with unique, individualized neuro-rehabilitation strategies under Dr. Lewis Wheaton
- ▶ Ran and analyzed MRI and EEG data through the use of Excel, SPSS, MATLAB, and R

Center for Advanced Brain Imaging

05/2014 – 01/2015
Atlanta, GA

Research Assistant

▶ Effect of Brain Games and Training on Cognitive Skills

- ▶ Investigated the effect of brain games and training on cognitive skills
- ▶ Used MATLAB and E-Prime software to conduct experiments, record results, and analyze data

Department of Pathology and Laboratory Medicine, Emory University

06/2011 – 08/2011
Atlanta, GA

Summer Research Assistant

- ▶ Researched the role of folic acid receptors in nanoparticle vaccination delivery

Department of Immunology, Mercer University

05/2011 – 05/2016
Atlanta, GA

Research Assistant

▶ Theragnostic Nanoparticles as a Potential Delivery System for Tumor Targeting

- ▶ Determined the effects of certain nanoparticle properties (e.g., size, charge) on efficacy of nanoparticle delivery
- ▶ Formulated therapeutic nanoparticles as a potential tumor targeting and imaging delivery system

Enopi Learning Center Tutoring

05/2012 – 05/2013

Tutor

- ▶ Tutored high-school students in essential topics for the SAT and ACT standardized exams

JOURNAL PUBLICATIONS

- ▶ Gendreau J, Kim L, Prins PN, **D'Souza M**, Rezaii P, Pendharkar AP, Sussman ES, Ho AL, Desai AM. Outcomes After Cervical Disc Arthroplasty Versus Stand-Alone Anterior Cervical Discectomy and Fusion: A Meta-Analysis. *Global Spine Journal*. 2019 Nov 21. [↗](#)
- ▶ **D'Souza M**, Gendreau J, Feng AY, Ho AL. Robot-assisted spine surgery: current applications and future advances. *Rob Surg*. 2019 Nov 7; 2019(6):9-23. [↗](#)
- ▶ Delaney SL, Gendreau JL, **D'Souza M**, Feng AY, Ho A. Optogenetic Modulation for the Treatment of Traumatic Brain Injury. *Stem Cells Dev*. 2019 Sep 27. [↗](#)
- ▶ **D'Souza M**, Macdonald NA, Gendreau JL, Duddleston PJ, Feng AY, Ho AL. Graft Materials and Biologics for Spinal Interbody Fusion. *Biomedicine*. 2019 Sep 26;7(4). [↗](#)
- ▶ Nguyen L, Bowlds S, Juan D, Thompson A, Clayton E, Spencer C, **D'Souza M**, Bromberg W. Predictors of Pneumothorax (POP) Score: A Statistical Model for Identifying Occult Pneumothoraces after Blunt Chest Trauma That Will Require Intervention. *Am Surg*. 2019 Aug 1; 85(8):e430-e432.
- ▶ **D'Souza M**, Chen KS, Rosenberg J, et al. Impact of skull density ratio on efficacy and safety of magnetic resonance-guided focused ultrasound treatment of essential tremor. *J Neurosurg*. 2019 Apr 26;:1-6. [↗](#)
- ▶ Kim L H, **D'Souza M**, Ho A L, et al. Anterior techniques in managing cervical disc disease. *Cureus*. 10(8): e314. 2018 Aug 14. [↗](#)
- ▶ Iyer A, **D'Souza M**, Steinberg GK. Embolization before stereotactic radiosurgery for the treatment of brain arteriovenous malformations. *J Neurosurg Sci*. 2018 Mar 26. [↗](#)
- ▶ Kolluru LP, Rizvi SAA, **D'Souza M**, D'Souza MJ. Formulation development of albumin based theragnostic nanoparticles as a potential delivery system for tumor targeting. *J Drug Target*. 2013;21(1):77-86. [↗](#)

BOOK CHAPTERS

- ▶ Braz Gomes K, D'Sa S, Jin Z, Bejugam N, **D'Souza M**, et al. *Nanoparticle Vaccine Delivery Systems*. 1 ed. D'Souza MJ, editor. Singapore: Pan Stanford Publishing Pte. Ltd.; 2015. Chapter 1, Introduction; p.1-11. [↗](#)
- ▶ Chiriva-Internati M, **D'Souza M**, Chablani L, Akalkotkar A, Tawde SA, et al. *Molecular Vaccines*. 2 ed. Giese M, editor. Online: Springer; 2014. Chapter 19, *Nanotechnology in Vaccine Delivery*; p.727-742

PRESENTATIONS

- ▶ Gendreau J, **D'Souza M.** (Oct 2019). Comparing Stand-Alone Anterior Cervical Dissectomy and Fusion to Cervical Disc Arthroplasty for the Treatment of Spine Disease: A Meta-Analysis. Poster presentation given at the Congress of Neurological Surgeons Annual Meeting, San Francisco, CA.
- ▶ **D'Souza M.** (Apr 2019). Impact of Skull Density Ratio on Efficacy and Safety of Magnetic Resonance-Guided Focused Ultrasound Treatment of Essential Tremor. Oral presentation given at the American Association of Neurological Surgeons Annual Meeting, San Diego, CA.
- ▶ **D'Souza M.** (Oct 2018). Optimizing Coordinated Reset within the Nucleus Accumbens to Attenuate Binge Drinking. Oral presentation given at the Medical Association of Georgia House of Delegates Meeting, Jekyll Island, GA.
- ▶ **D'Souza M**, McGreal A, Akin M. (May 2018). Disparities in Surgical Cancer Care from the Patient-Centered Perspective. Oral presentation given at the Joint Mercer University School of Medicine and School of Pharmacy Research Symposium, Macon, GA.
- ▶ **D'Souza M**, Daly B, Greenlee S, Meltzer M. (Dec 2014). The Effects of Subconscious Color Queuing on Taste Perception. Poster presentation given at the Georgia Tech School of Psychology Poster Conference, Atlanta, GA.
- ▶ **D'Souza M**, Atri L, Rao T, Bale P, Hammond W, Tuteja H. (Mar 2014). Curbing Prescription Drug Abuse through the Creation of Digital Pill Cap. Poster presentation given at the Georgia Tech Grand Challenges Research Symposium, Atlanta, GA.

SOFTWARE PROJECTS

BearWiki

Website

- ▶ Creating a student-driven Wiki website in order to foster communication and information dissemination throughout the MUSM student body across campuses and classes

VADERS (Value Analysis Data Extraction Research System)

Software

- ▶ Collaborated with Dr. Bruce Ziran, Director of Orthopaedic Trauma at the Gwinnett Medical Center, on an image recognition-based software designed to analyze fracture reductions
- ▶ Incorporated machine learning and classification algorithms (k-Nearest Neighbors) to combine reduction quality with time and cost of surgery in order to objectively quantify the quality of a given surgery

Food Renewed | JP Morgan Chase Hackathon

iOS App

- ▶ Collaborated with Feed the Children and JP Morgan Chase to create an iOS application and web-based mobile site that matched individuals in the Supplemental Nutrition Assistance Program (SNAP) with grocery stores and restaurants that were about to throw away food
- ▶ Utilized Material Design for front-end and Django for back-end development

Shopping with Friends

Android & iOS App

- ▶ Created Android and iOS applications for shoppers to post information about various items' prices, locations, and availability with the ability to share with friends

Multicultural Greek Society | mgc.gtorg.gatech.edu

Website

- ▶ Re-designed the Georgia Tech MGC website in efforts to spread MGC's name and promote diversity awareness throughout campus

Sigma Sigma Rho Sorority, Inc. | gtsigsigrho.com

Website

- ▶ Increased intake by 150% through the use of effective marketing strategies including photography, flyers, and the redesign of the website

When I Grow Up

iOS App

- ▶ Designed and prototyped an iOS app using Axure that featured a board game designed to help users determine the career fields that match their interests and to manage a career from entry level to retirement

VOLUNTEER

Special Pops Tennis Savannah

08/2019 – Present
Savannah, GA

- ▶ Teaching and participating in weekly adult tennis/pickleball clinics, tournament play, and social events for individuals with intellectual disabilities

St. Jude Heroes | Rock 'n' Roll Savannah Half Marathon

11/2019
Savannah, GA

- ▶ Ran a half-marathon and raised \$660 for St. Jude Children's Research Hospital

"MUSM Day of Service" | Moses Jackson Advancement Center

03/2017 – 03/2019
Savannah, GA

- ▶ Participated in the annual "MUSM Day of Service" in which MUSM students help with health screenings, cooking demonstrations, fitness classes, and more at a local development facility

"Be the Change Day" | Hands-On Atlanta

05/2014 – 05/2017
Atlanta, GA

- ▶ Led and organized "Be the Change Day" – a school-wide volunteering event sponsored by multiple Greek organizations that coordinated the placement of 200+ college students at volunteering sites throughout the city of Atlanta

Shepherd Center | Spinal Cord and Brain Injury Rehabilitation Hospital

01/2016 – 01/2017
Atlanta, GA

- ▶ Provided longitudinal fitness support and training over the course of a year to four patients recovering from spinal cord injuries in the ProMotion gym facility

PROFESSIONAL MEMBERSHIPS

American Association of Neurological Surgeons (AANS)

01/2019 – Present

American Academy of Neurology (AAN)

09/2018 – Present

Medical Association of Georgia (MAG)

06/2018 – Present

American Medical Association (AMA)

01/2018 – Present

Phi Delta Epsilon International Medical Fraternity, Inc.

12/2017 – Present

SKILLS

Programming

Neural Signal Processing

Data Analysis

Website & User Interface Design

3D Modeling

Event Planning

App Development

LANGUAGES

MATLAB



Java



JavaScript/jQuery



Python



R



SOFTWARE

Adobe Creative Suite



SolidWorks



Epic



Analysis of Functional NeuroImagines



Android Studio



Xcode



COURSEWORK

- ▶ Data Structures and Algorithms
- ▶ Object Oriented Programming
- ▶ Applied Combinatorics
- ▶ Computer Organization and Architecture
- ▶ Information Visualization
- ▶ Industrial Design Computing II
- ▶ User Interface Design
- ▶ Computational Photography
- ▶ Real Estate Development
- ▶ Marketing Management
- ▶ Functional Neuroanatomy
- ▶ Computer Graphics

HOBBIES

- ▶ Traveling
- ▶ Playing with my dog
- ▶ Interior design
- ▶ Drawing
- ▶ Working out
- ▶ Calligraphy
- ▶ Tennis
- ▶ Coding
- ▶ Hiking