

MARISSA D'SOUZA

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EDUCATION

Mercer University School of Medicine (MUSM) <i>Doctor of Medicine</i>	Aug 2017 – May 2021 (Expected)
Georgia Institute of Technology <i>Bachelor of Science in Computer Science</i>	Aug 2013 – May 2017 Magna Cum Laude Overall GPA: 3.5/4.0

HONORS & AWARDS

<i>American Association of Neurological Surgeons (AANS) Medical Student Summer Research Fellow</i>	May 2018 – Aug 2018
<i>Georgia Tech Dean's List</i>	Dec 2013 – May 2017

LEADERSHIP EXPERIENCE

Student Council MUSM <i>Student Body Secretary</i> <ul style="list-style-type: none">➤ Organizing and running school-wide elections for positions within Student Council➤ Taking attendance and minutes at the monthly Student Council meetings	Apr 2018 – Present
General Surgery Interest Group MUSM <i>Vice President</i> <ul style="list-style-type: none">➤ Assisting the President in organizing events tailored to medical students interested in General Surgery including resident/physician panels, quiz bowls, and other related events	Apr 2018 – Present
Phi Delta Epsilon International Medical Fraternity, Inc. Epsilon Mu Chapter <i>Vice President of Recruitment</i> <ul style="list-style-type: none">➤ Produced marketing material and planning events to encourage growth and membership within the chapter➤ Recruited 20+ members and collaborated with other executive officers for various logistics associated with establishing a chapter	Dec 2017 – Dec 2018
Student Council MUSM <i>Class Secretary</i> <ul style="list-style-type: none">➤ Sent weekly class e-mails and updated the class calendar with upcoming deadlines, dates, and important reminders	Nov 2017 – Apr 2018
Multicultural Greek Council (MGC) Georgia Tech <i>Executive Vice President</i> <ul style="list-style-type: none">➤ Corresponded with the President of MGC as well as the Presidents of other Greek councils to organize campus-wide events to help students get together and give back to the campus➤ Re-designed the MGC website	Jan 2015 – Dec 2015
Sigma Sigma Rho Sorority, Inc. Nu Chapter <i>Vice President of Communications, Philanthropy Chair</i> <ul style="list-style-type: none">➤ Organized and led "Be the Change Day" – a day of service attended by over 150 students devoted to volunteer activities throughout the Atlanta area➤ Managed logistics and crucial marketing/delegating critical tasks to ensure success of all events➤ Re-designed the GT Sigma Sigma Rho website	Jan 2014 – Dec 2015
Biomedical Engineering Society Georgia Tech <i>Secretary</i> <ul style="list-style-type: none">➤ Encouraged the use of technology within the club through extensive collaboration with the web developer and other board members	Jan 2014 – May 2015

RESEARCH & WORK EXPERIENCE

Department of Neurosurgery, Stanford University School of Medicine

May 2018 – Present

Remote Research Assistant

Stanford, CA

- **Coordinated Reset-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 collaboration with Dr. Casey Harrison Halpern and Dr. Allen Ho
 - Utilizing neural signaling toolboxes within MATLAB to determine a characteristic electrophysiological marker within the nucleus accumbens prior to onset of binge-drinking behaviors
 - Determining the threshold success rate that DBS would require in order to be the preferred mode of treatment for alcoholism and alcohol abuse disorders in collaboration with Dr. Brandon Bentzley and Dr. Casey Halpern
- **Impact of Skull Density Ratio on Safety and Efficacy of Magnetic Resonance-Guided Focused Ultrasound Thalamotomy for the Treatment of Essential Tremor**
 - Determined the effect of lower skull density ratios on the rates of adverse events and tremor improvement in the focused ultrasound-based thalamotomy treatment of Essential Tremor in collaboration with Dr. Casey Halpern and Dr. Pejman Ghanouni

Department of Surgery, Memorial Health University Medical Center

Dec 2017 – Present

Clinical Research Assistant

Savannah, GA

- **New Prescription Opioid Use Following Cholecystectomy and Hernia Repair**
 - Determining a standardized opioid prescribing regimen following certain general surgical procedures at Memorial Health Medical Center under guidance of Dr. Christopher Senkowski
- **Factors that Predict Conservative Management Failure of Occult Pneumothoraces**
 - Determined a mathematical equation to predict conservative management failure of occult pneumothoraces based on presenting symptoms and patient demographics in collaboration with Dr. David Juan

Georgia Tech Cognitive Neuro Motor Control Lab

Jan 2015 – May 2017

Research Assistant

Atlanta, GA

- **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 neuro-rehabilitation strategies in collaboration with Dr. Lewis Wheaton (GT) and Dr. Deborah Backus (Shepherd Center)
 - Ran and analyzed MRI and EEG data through the use of Excel, SPSS, MATLAB, and R

Shepherd Center | Spinal Cord and Brain Injury Rehabilitation Hospital

Jan 2016 - May 2017

ProMotion Fitness Buddy

Atlanta, GA

- Provided fitness support and training for community members recovering from spinal cord injury at the ProMotion gym facility

Center for Advanced Brain Imaging

May 2014 – Jan 2015

Research Assistant

Atlanta, GA

- **Effects of Brain Games and Training on Cognitive Skills**
 - Investigated the effects of brain games and training on one's cognitive skills under Dr. Eric Schumacher
 - Used MATLAB and E-Prime software to conduct experiments, record results, and analyze data

Department of Pathology and Laboratory Medicine, Emory University

Jun 2011 - Aug 2011

Summer Research Assistant

Atlanta, GA

- Researched the part folic acid receptors have to play in nanoparticle vaccination delivery under Dr. Periasamy Selvaraj

Department of Immunology, Mercer University

May 2011 – May 2016

Research Assistant

Atlanta, GA

- **Theranostic 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

Johns Creek Tennis Academy

May 2011 - Aug 2014

Tennis Instructor

Johns Creek, GA

- Obtained a Professional Tennis Registry certification to teach young players aged 17 and under how to play tennis
- Instructed over 50 kids aged 5-15 the technique, rules, and good behaviors needed for success on the tennis court

PUBLICATIONS

Published:

- Kim L H, **D'Souza M**, Ho A L, et al. Anterior Techniques in Managing Cervical Disc Disease. *Cureus* 10(8): e3146 2018 Aug 14. [DOI: 10.7759/cureus.3146](https://doi.org/10.7759/cureus.3146)
- Iyer A, **D'Souza M**, Steinberg GK. Embolization before stereotactic radiosurgery for the treatment of brain arteriovenous malformations. *J Neurosurg Sci*. 2018 Mar 26. [DOI: 10.23736/S0390-5616.18.04425-9](https://doi.org/10.23736/S0390-5616.18.04425-9)
- 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. [DOI:10.3109/1061186X.2012.729214](https://doi.org/10.3109/1061186X.2012.729214)
- **D'Souza M**, et al. Impact of Skull Density Ratio on Efficacy and Safety of Magnetic Resonance-Guided Focused Ultrasound Treatment of Essential Tremor. *J Neurosurgery*. *Manuscript in press*.

In Process:

- Juan D, Spencer C, **D'Souza M**, Clayton E, Bromberg W. Management of occult pneumothorax in blunt trauma: when to intervene? *Manuscript in process*.
- **D'Souza M**, Ho AL, Halpern CH. Frameless, stereotactic robot-assisted MR-guided laser interstitial thermal therapy for intractable epilepsy. *Manuscript in process*.
- **D'Souza M**, Gendreau J, Ho AL. Robot-Assisted Spine Surgery: Current Applications and Future Advances. *Manuscript in process*.
- **D'Souza M**, Macdonald N, Ho AL. Biologics and graft materials for minimally-invasive spinal interbody fusion. *Manuscript in process*.
- Gendreau J, Kim L, Prins PN, **D'Souza M**, Rezaii P, Pendharkar AP, Sussman ES, Ho AL, Desai AM. Comparing stand-alone anterior cervical discectomy and fusion to cervical disc arthroplasty for the treatment of spine disease: a meta-analysis. *Manuscript in process*.

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

- **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. To be presented at the American Association of Neurological Surgeons Annual Meeting, San Diego, CA.
- **D'Souza M**, McGreal A, Akin M. (May 2018). *Disparities in Surgical Cancer Care from the Patient-Centered Perspective*. Oral presentation. 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. 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. Georgia Tech Grand Challenges Research Symposium.

PROFESSIONAL MEMBERSHIPS

American Association of Neurological Surgeons	Jan 2019 – Present
American Academy of Neurology	Sep 2018 – Present
Medical Association of Georgia	June 2018 – Present
American Medical Association	Jan 2018 – Present
Phi Delta Epsilon International Medical Fraternity, Inc.	Dec 2017 – Present

SOFTWARE

VADERS (Value Analysis Data Extraction Research System)	Software
<ul style="list-style-type: none">➤ Collaborated with Dr. Bruce Ziran, Director of Orthopaedic Trauma at the Gwinnett Medical Center, on a software that utilized image recognition to analyze fracture reductions➤ Incorporated machine learning and classification algorithms (k-Nearest Neighbors) to combine reduction quality with time and cost of surgery to objectively determine the quality of a given surgery	
Food Renewed JP Morgan Chase Hackathon	iOS App
<ul style="list-style-type: none">➤ Collaborated with Feed the Children and JP Morgan Chase to create an iOS application and web based mobile site that matches individuals in the Supplemental Nutrition Assistance Program with grocery stores and restaurants that are about to throw away food➤ Utilized Material Design for front end and Django for back end development	
Shoppings with Friends	Android & iOS App
<ul style="list-style-type: none">➤ Created an Android and iOS application for shoppers to post information about various items' prices, locations, and availability to share with friends	
When I Grow Up	iOS App
<ul style="list-style-type: none">➤ Designed and prototyped an iOS app using Axure which features 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	
Multicultural Greek Society mgc.gtorg.gatech.edu	Website
<ul style="list-style-type: none">➤ 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
<ul style="list-style-type: none">➤ Increased intake by 150% through the use of effective marketing strategies including photography, flyers, and the redesign of the website	

SKILLS AND INTERESTS

Skills	Neural signal processing (MEG/EEG/LFP), data analysis, website design, user interface design, 3D modeling
Languages	MATLAB, CSS, HTML, SPSS, Java, JavaScript, jQuery, Python, R, Django, Material Design, Swift, LaTeX
Software	Epic, SolidWorks, Adobe Creative Suite, AFNI Neuroimaging, Android Studio, Xcode, Axure
Coursework	Information Visualization, Industrial Design Computing II, Data Structures and Algorithms, Object Oriented Programming, Applied Combinatorics, Computational Photography, UI Design, Computer Graphics, Computer Organization and Architecture, Real Estate Development, Marketing Management
Volunteer	Fulton County Animal Shelter, Georgia SPCA, Habitat for Humanity, Hands-On Atlanta
Hobbies	Tennis, working out, playing with my dog, drawing