

PhD candidate with experience in extended reality, computer vision, and neural engineering. Proven expertise in spearheading innovative projects, managing teams, mentoring, and rapidly adapting to new environments.

EDUCATION

Stanford University <i>PhD in Bioengineering; GPA: 4.02/4.00</i>	CA, US 2019 - June 2025 (<i>Expected</i>)
American University of Beirut (AUB) <i>Master of Science in Biomedical Engineering; GPA: 95.04%</i>	Beirut, Lebanon 2017 - 2019
Holy Spirit University of Kaslik (USEK) <i>Bachelor of Engineering in Biomedical Engineering, high distinction; GPA: 95.34%</i>	Kaslik, Lebanon 2013 - 2017

RESEARCH EXPERIENCE

Stanford University <i>Graduate Research Assistant</i>	CA, US Oct 2020 - Present
<ul style="list-style-type: none">◦ Stereoscopic calibration for augmented reality visualization in microscopic surgery◦ Computer vision for improving the accuracy of tracking in augmented reality◦ Interactive shape sonification for tumor localization in breast cancer surgery	
<i>Undergraduate Student Mentor</i>	June 2022 - Present
<ul style="list-style-type: none">◦ Tracking and augmented reality visualization of needles in ultrasound-guided gynecologic brachytherapy◦ Automating surgical instrument tracking in mastoidectomy videos with YOLOv8◦ Improving gaze stabilization exercises with virtual reality	
Neural Engineering and Nanobiosensors Group, AUB <i>Graduate Research Assistant</i>	Beirut, Lebanon Jan 2018 - Sep 2019
<ul style="list-style-type: none">◦ High resolution electrical stimulation of the retina◦ Modeling the effect of ultrasound on neural excitability◦ B-Type Natriuretic Peptide biosensing for point-of-care heart failure diagnostic platforms	
Robotics and Mechatronics Laboratory, University of Twente <i>Student Researcher</i>	Enschede, the Netherlands Oct 2016 - May 2017
<ul style="list-style-type: none">◦ Multimodality image registration for visualization in robotic assisted breast biopsy	
CardioDiagnostics <i>Research and Development Intern</i>	Dbayeh, Lebanon June 2016 - Aug 2016
<ul style="list-style-type: none">◦ Unsupervised machine learning and data mining of cardiac patient data sets	

PUBLICATIONS

- **T. E. Chemaly***, L. Schütz*, B. Daniel, C. Leuze, N. Navab, Interactive Shape Sonification for Tumor Localization in Breast Cancer Surgery, ACM Special Interest Group on Computer-Human Interaction (CHI), (accepted).
- C. A. Neves, G. S. Liu, **T. E. Chemaly**, I. A. Bernstein, F. Fu, N. H. Blevins, Automated Radiomic Analysis of Vestibular Schwannomas and Inner Ears Using Contrast-Enhanced T1-Weighted and T2-Weighted Magnetic Resonance Imaging Sequences and Artificial Intelligence, *Otology & Neurotology* 2023, pp. 10.1097.
- **T. E. Chemaly**, C. A. Neves, C. Leuze, B. Hargreaves, N. H. Blevins, Stereoscopic calibration for augmented reality visualization in microscopic surgery, *International Journal of Computer Assisted Radiology and Surgery* 2023, pp. 1-9.
- M. de Lotbiniere-Bassett, A. V. Batista, C. Lai, **T. E. Chemaly**, J. Dort, N. Blevins, J. Lui, The user experience design of a novel microscope within SurgiSim, a virtual reality surgical simulator, *International Journal of Computer Assisted Radiology and Surgery* 2022, pp. 1-9.
- **T. E. Chemaly***, H. Alawieh*, M. Khraiche, Towards Point-of-Care Heart Failure Diagnostic Platforms: BNP Biosensors, *Sensors* 2019, 19, 5003.

- R. E. Hassan, **T. E. Chemaly**, M. Khraiche, Towards a Biomechanical Model for Ultrasound Effect on Neural Excitability, 2018 IEEE International Multidisciplinary Conference on Engineering Technology (IMCET), Beirut, 2018, pp. 1-6.
- **T. E. Chemaly**, F. J. Siepel, S. Rihana, V. Groenhuis, F. van der Heijden and S. Stramigioli, MRI and stereo vision surface reconstruction and fusion, 2017 Fourth International Conference on Advances in Biomedical Engineering (ICABME), Beirut, 2017, pp. 1-4.

TEACHING EXPERIENCE

Stanford University

CA, US

Teaching Assistant

Spring 2021, Fall 2021, Spring 2022

- BIOE 80: Introduction to Bioengineering
- RAD206: Mixed-Reality in Medicine
- BIOE301C: Diagnostic Devices Lab

AWARDS AND HONORS

- **Best Use of Looking Glass**, MIT Reality Hack, Jan 2024
- **2nd Place for our project EduVision**, MIT Reality Hack Startup Track, Jan 2024
- **1st Place for our project Touchless Heartbeat**, Stanford XR Hackathon: Reimagining Reality, May 2022
- **The Eltoukhy Family Graduate Fellowship**, Stanford, 2019 - 2020
- **Best 3MT Research Presentation Award**, AUB, Apr 2019
- **3MT People's Choice Award**, AUB, Apr 2019
- **Robotics Design Award**, Massachusetts Qualifying Skyrise, VEXU Robotics Competition, Apr 2015
- **Merit Scholarship**, USEK, 2013 - 2017 (awarded for ranking first in the entire Engineering Department)
- **Excellence Scholarship**, USEK, 2012 - 2013

LEADERSHIP

Stanford XR

CA, US

President

May 2023 - Present

- Organized [Immerse The Bay](#), Stanford University's first public XR Hackathon, making it the largest XR hackathon in the Bay Area and one of the 3 largest in the world with 319 competitors, 10 countries, and 82 universities
- Led a committed team of 23 to successfully execute Immerse The Bay
- Raised funds and equipment worth \$50k+, marketed to 100+ universities worldwide, and organized the entire experience for 200+ in-person participants for 3 days
- Led efforts to make the hackathon beginner-friendly by providing mentors and organizing workshops, resulting in over 50% participation from first-time hackers and students who had never tried XR headsets before

Vice President and XR Mentor

Oct 2022 - May 2023

- Co-founded and directed Stanford University's first XR incubator program
- Delivered talks and mentorship to students by collaborating with venture capitalists and industry professionals
- Co-organized the [2023 Stanford XR Annual Conference](#) and led the medical XR panel
- Mentored 10+ teams to build and launch their products

USEK Robotics Team

Kaslik, Lebanon

Team Leader

June 2016 - June 2017

RobotC Programmer

Sep 2015 - June 2017

SKILLS

- Virtual and augmented reality development (4+ years in Unity and C#, Swift)
- Computer vision and deep learning (Python, MATLAB, Unity and C#)
- Object-oriented programming (C#, Python, JavaScript)
- Robotics programming (C/C++, RobotC, ROS, Mathematica)
- Medical signal and image processing, computational modeling (Python, MATLAB)
- Experimental handling and electrical recording from neural tissue
- Analysis of neural recording (MATLAB, Offline Sorter, Spike 2)