

ARUSHRI SWARUP

58 Northforest Trail, Kitchener, Ontario, N2N 2Z1
519-575-5468 | arushri.swarup@mail.utoronto.ca

PERSONAL STATEMENT: A driven, hard-working and optimistic MASc. candidate, developing new instruments to facilitate endoscopic ear surgery, affiliated with IBBME and the Hospital for Sick Children. Through the undergraduate program of Engineering Science, Biomedical Systems Option at U of T as well as through internships, she has developed engineering design, teamwork and project management skills.

WORK EXPERIENCE

Masters of Applied Science Candidate – IBBME and the Hospital for Sick Children Sept, 2016 - Present

- Collaborating with a pediatric ear surgeon to develop and test surgical instruments
- Fabricated a prototype instrument using a micro-mill machine and assembly of components; presented it at the 2nd World Congress for Endoscopic Ear Surgery in Bologna, Italy in April, 2017
- Conducting a needs analysis survey for international endoscopic ear surgeons to inform the design of instruments, with SickKids Research Ethics Board approval; a clinical peer-reviewed paper will be submitted in September, 2017

Capstone Engineering Design Teaching Assistant – IBBME Sept, 2016 - Present

- Provides thorough feedback to engineering teams on how to design prototypes, manage the project, communicate with clients & supervisors and deliver final presentations
- Connected teams with resources and advisors around University of Toronto and SickKids Hospital
- Presented a poster at the Canadian Engineering Education Association conference in Toronto on June 6, 2017: "Using a Multidisciplinary Team-Based Challenge to Promote Brainstorming and Prototyping of Medical Devices"

Research Student – Centre for Image Guided Innovation and Therapeutic Intervention (CIGITI) at The Hospital for Sick Children May – August, 2016

- Co-author for an American Society of Mechanical Engineers (ASME) design innovation paper submitted May, 2017 outlining the mechanical design and test results of a compliant joint
- Used Solidworks, 3D printing and CNC Mill Machining to fabricate specimens, characterized force vs. deformation using a force sensor and Arduino apparatus, and analyzed results with Matlab
- Mentored summer students to design and fabricate prototypes

Engineering Associate – Baylis Medical Company May, 2014 – August, 2015

- Performed and documented device verification and validation testing as per ISO standards
- Prototyped and tested medical device production tools while incorporating feedback from senior engineers and device production operators

EDUCATION

University of Toronto September, 2011 – April, 2016

- **Bachelor of Applied Science and Engineering, Biomedical Systems Option, Graduated with Honours, 3rd and 4th year GPA: 3.7**

ENGINEERING PROJECTS

Design of an Endoscopic Neurosurgical Bipolar Robotic Tool January – June, 2017

- Collaboratively designed, fabricated and tested a bipolar robotic tool with a team at the CIGITI lab

- Used CAD, micro-milling machine and soldering techniques to fabricate and assemble the tool
- Tested and recorded the tool cauterizing animal tissue, operated by a surgical robot
- The tool was demonstrated at a presentation at the Hamlyn Robotics Competition hosted by Imperial College London in June, 2017

Design and Fabrication of an Endoscopic Ear Surgery Tool September – December, 2015

- Collaboratively designed a modified surgical tool for Endoscopic Ear Surgery with four team members and an ear surgeon at SickKids Hospital
- Used Solidworks, 3D printing and Mill machining to design a functional prototype and tested inside a 3D printed ear canal model and a cadaver ear canal

Undergraduate Thesis: Computer Simulation of Nerve Stimulation September, 2015 – April, 2016

- Developed a model of electrical nerve stimulation on a simplified human leg using COMSOL Multiphysics physical modeling software
- Analyzed nerve excitability using Matlab and optimized model parameters
- Delivered thesis presentation to peers and supervisor; submitted Thesis report

Fabrication of Pneumatic Engine - Basic Machining Course at George Brown College February, 2015

- Learned to use a lathe, mill machine and drill press to machine a pneumatic engine

Aeroponic Garden Project May 2012 – November, 2014

- Collaboratively built an Aeroponic Garden System consisting of individual garden units with a central nutrient-spraying and drainage system, with a team and U of T professor
- Implemented the project in an elementary school classroom in Toronto

SKILLS

- Matlab, Solidworks, SolidCAM, Microsoft Office, COMSOL Multiphysics, ImageJ
- CNC Mill Machining, Laser Welder, Force Gauge, Pull Test Stand, 3D Printing
- Certified in Laser Safety Training by U of T, May, 2013

AWARDS

- POS Innovation Grant, SickKids, 2017
- Harry Barberian Scholarship Award, Otolaryngology – Head&Neck Surgery, U of T, 2017
- Director's Innovation Award, August, IBBME, 2016
- Dean's List University of Toronto, 2015-2016
- NSERC IUSRA Award May-August, 2014 and 2015 during PEY at Baylis Medical

CLINICAL AND VOLUNTEER EXPERIENCE

Grand River Hospital/Regional Cancer Centre Volunteer: Summer Student Program July – August, 2011

- Conversated with patients undergoing chemotherapy

Volunteer at Baylis Medical Company Christmas Party December, 2014

Engineering Science Ambassador September – December, 2013

- Conversated with prospective Engineering Science students at University Fairs

HOBBIES

Bollywood Dance Instructor at Hart House, U of T February – July, 2016

REFERENCES – supplied upon request