

# ANEEQ ZIA

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## EDUCATION

- Georgia Institute of Technology** (2015-present)  
*PhD Electrical and Computer Engineering* CGPA: 4.00/4.00
- Georgia Institute of Technology** (2013-2015)  
*MS Electrical and Computer Engineering* CGPA: 4.00/4.00
- LUMS School of Science and Engineering, Lahore, Pakistan** (2008-2012)  
*BS Electrical Engineering* CGPA: 3.75/4.00

## RESEARCH EXPERIENCE

- Eye-Team, Computational Perception Lab, Georgia tech** (under Dr.Irfan Essa) (Jan 2014-present)  
*Activity Assessment*
- Aimed at assessing the quality of action being performed using multi-modal data
  - Time series analysis on data collected (video and accelerometer) from surgical trainees to predict skill level
  - Deep learning based model development for sports skill prediction
- Surgical Tool Detection*
- Tool detection in laparoscopic surgery videos using different deep learning methods
  - Achieved top-3 results in the M2CAI 2016 workshop surgical tool detection challenge
- Medical Research Intern, Intuitive Surgical** (May–Aug 2017)  
**Atlanta, USA**
- Developed deep learning based models for understanding surgical data
  - Worked on multi-modal data analysis for giving surgeons more directed feedback
- Medical Research Intern, Intuitive Surgical** (May–Aug 2016)  
**Atlanta, USA**
- Explored different machine learning methods for understanding surgeon activities
  - Developed models for clustering sequential data
  - Won “Best Methods Presentation” at the annual analytics day
- Summer Internship in Autonomous Robotics, National University of Ireland** (Jun-Aug 2011)  
**Maynooth, Ireland**
- Humanoid Robot Soccer*
- Worked on Machine Learning for color classification and image segmentation (an alternate to LUT)
  - Used LDA, PCA, Multi-Class SVM and One-Class SVM for color classification using MATLAB
  - Successful segmentation of the images taken from the Humanoid Robot
- Manufacturing and Automation Research Center, KOC University** (Jun-Aug 2010)  
**Istanbul, Turkey**
- Ball and Plate System*
- Complete design and implementation of the control system
  - Successful implementation of Polar and Polygon Path Traversal algorithm on the system

## PUBLICATIONS

- A. Zia, C. Zhang, X. Xiong, A.Jarc, “Temporal clustering of surgical activities in robot-assisted surgery”, Information Processing in Computer-Assisted Interventions (IPCAI) 2017
- A. Zia, Y. Sharma, V. Bettadapura, E.Sarin, I.Essa, “Video and Accelerometer-Based Motion Analysis for Automated Surgical Skills Assessment”, Information Processing in Computer-Assisted Interventions (IPCAI) 2017

- A.Zia, D. Castro, I. Essa, “Fine-tuning Deep Architectures for Surgical Tool Detection”, Modelling and Monitoring of Computer Assisted Interventions (M2CAI), Surgical Tool Detection Challenge (2016)
- A. Zia, Y. Sharma, V. Bettadapura, E. Sarin, I.Essa, “Automated video-based assessment of surgical skills for training and evaluation in medical schools”, International Journal of Computer Assisted Radiology and Surgery 11(9) (2016) 1623-1636
- A. Zia, Y. Sharma, V. Bettadapura, E. Sarin, M. Clements, I. Essa, “Automated Assessment of Surgical Skills Using Frequency Analysis”, Proc. 18th International Conference on Medical Image Computing and Computer Assisted Interventions (MICCAI 2015), Munich, Germany, October 2015.
- A.Zia, “Polar and Polygon Path Traversal of a Ball and Plate System,” 2<sup>nd</sup> International Conference on Electrical and Control Engineering (ICECE), Sep 2011, pp. 4005-4009

## PROFESSIONAL EXPERIENCE

**Instrumentation Engineer, Engro Polymers and Chemicals Ltd** (2012-2013)

**Karachi, Pakistan** (*Graduate Trainee Engineer*)

- Received extensive training on Industrial instrumentation and control systems
- Successful development and testing of Gas Turbine local operating systems for backup
- Successful development and installation of Redlion HMI at the water purification plant
- Received ‘*Trainee of the month*’ award

**Teaching Assistant, LUMS School of Science and Engineering**

*Circuits and Electronics* (EE 240)

(Fall 2010)

*Electricity and Magnetism* (PH 102)

(Spring 2011)

## AWARDS AND HONORS

- Finalist for 2017 Georgia Tech Master Modeler Competition
- Received the student travel award for the paper published in MICCAI 2015
- Won Pakathon 2014 (a global hackathon)
- Received Fulbright Scholarship for Masters at Georgia Tech
- ‘*Dean’s Honor Roll*’ in all years at LUMS
- Represented Pakistan in the 39<sup>th</sup> International Physics Olympiad held in Vietnam 2008
- *World top* in Ordinary Level Mathematics
- *Presidential Award* in O/A Level world toppers ceremony 2007

## PROFESSIONAL AND TECHNICAL SKILLS

- Software/libraries: MATLAB, Caffe, Tensorflow, Keras, PyTorch, Multisim, Labview, PSICE, Ultiboard, Proteus, SolidWorks
- Programming Languages: C/C++, Python, Assembly

## LEADERSHIP POSITIONS AND OTHER ACCOMPLISHMENTS

**Fulbright Student Association, Georgia Tech**

- *President* (May 2015-Sep 2015)
- *Vice-President* (August 2014-present)

**Pakistani Student Association (PSA), Georgia Tech**

- *Treasurer* (April 2014-present)

**Society for Promotion and Development of Engineering and Sciences (SPADES), LUMS**

- *President* (2011 - 2012)
- *Executive Officer* (2010-2011)
- *Event Head ‘Robo-Wars’ and ‘Aerobatics’ in Psi-Fi (LUMS National Science Olympiad)* (2009-2011)