

# SULEMAN B. KAZI

## EDUCATION

- 2014 - 2016 | MS Electrical Engineering (Expected in March)  
Stanford University
- 2010 - 2014 | BSc. Electronics Engineering  
Ghulam Ishaq Khan Institute (GIKI), Pakistan. **GPA 3.89 / 4.00**  
**Quaid-e-Azam Gold Medal** (For best overall performance in the batch of 2014)

## EXPERIENCE

**Application Development Intern - Chirp Microsystems (June - Sep. 2015)** - Chirp Microsystems develops extremely low power, ultrasonic 3D-sensors. I worked as an intern developing high level applications and technology demonstrations for the sensor system.

**Robotics Research - Stanford AI Lab (March - June 2015)** - Design of a hybrid force/position controller for a Barrett WAM arm with a force sensor on the end effector and robust estimation techniques to achieve contact point detection with the environment.

**Course Grader - Stanford University - (Jan - March 2015):** For CS223A - Introduction to Robotics.

**R&D Intern - LMKR - (May - July 2013):** Worked on signal and image processing algorithms to be used for automated underground fault tracking in seismic images obtained using reflection seismology. Implemented a variety of functions for use in enhancing and analyzing seismic images to locate underground hydrocarbon reserves.

**Research Intern - BiSMIL Lab GIKI - (Oct. 2012 - June 2013):** Developed a smart healthcare system (Project EpiC) with fall detection and portable EEG data collection capabilities under the Laboratory for Bio-Inspired Simulation and Modeling of Intelligent Life (BiSMIL)

- Won a full research grant from Pakistan's National ICT R&D Fund.
- Won the Pakistan National finals of Microsoft's Imagine Cup competition. Represented Pakistan in **St. Petersburg** for the world finals in July 2013 (Team Captain)
- Featured in Higher Education Commission's "News And Views Magazine" (April 2013 pp. 10-11)
- Won the best presentation award at "Present around the World" Competition organized by the Institute of Engineering and Technology (IET) and I was invited to **Malta** for regional finals.

## PUBLICATIONS

1. S.B. Kazi, S. Sikander, S. Yousafzai, S. Mazhar "Fall detection Using a Single Tri-Axial Accelerometer", 2014 ASEE Zone 1 Conference, University of Bridgeport, Bridgeport, CT, USA
2. S.B. Kazi, S. Sikander, S. Yousafzai, I. Haq, S. Mazhar, "Fall Detection and Portable EEG Data Collection Using Smartphones" (Poster) 2<sup>nd</sup> Annual Computational Science Conference, 20-25<sup>th</sup> October 2013, Islamabad

## PROJECTS

- An **autonomous robotic vehicle** (quad bike) capable of following another leading vehicle or person using only a single camera. Awarded 2<sup>nd</sup> place at Industrial Open House and Careers Fair at GIKI.
- Detecting contact states in robotic end-effectors using machine learning.
- Using machine learning and AI techniques to track and predict eye-gaze locations for users in virtual reality headsets.
- Robot Aided **stereo panorama** capture and processing for display on virtual reality headsets
- Worked at the Autonomous Systems Lab in Stanford on **free flying space robots**.

- PID controller for an **inverted pendulum** using Matlab and Simulink.
- Custom Implementation of Sobel Edge Detection and Hough Transform Algorithms in Matlab.
- Breadboard Implementation of an 8-bit, five instruction computer using logic gates.
- Heads-Up-Display for an electric car showing operational parameters and power information.
- Simulation of 16-bit Quadrature Amplitude Modulation/Demodulation using Matlab.
- Design and implementation of a “brick catcher” game using discrete logic devices.
- Simulation of ant colony optimization technique applied to travelling salesman problem.

#### **Non-curricular/ Self-initiated Projects:**

- Prototype energy-efficient electric vehicle for the Shell Eco Marathon.
- Webcam based **Rubik’s cube** color detector and solver.
- Mandelbrot fractal generator.
- Autonomous **maze solving robot** for the National Engineering Robotics Contest 2012.

### RELEVANT COURSEWORK AND SKILLS

**Graduate Level** – Machine Learning, Artificial Intelligence, Convex Optimization, Experimental Robotics, Digital Image Processing, Multivariable Feedback Systems, Linear Dynamical Systems.

**Undergraduate Level** – Control Systems, Bio-inspired computing, Signals and Systems, Computer Architecture, Microcontrollers, Electric Machines, Communications, Logic Design.

**Programming Skills** – Embedded programming (PIC, 8051, Arduino, ARM mbed), Python, C++, C, MATLAB, Simulink, C#.NET, GNU Octave.

### ACHIEVEMENTS AND AWARDS

- Winner of the Teradata 12<sup>th</sup> National Excellence in IT Award (Excellence as an IT Student - 2014).
- On the deans honor roll for all eight semesters in undergraduate studies.
- Participated in **Shell Eco Marathon Asia 2014, Manila Philippines**. Placed 6<sup>th</sup> in electric prototype vehicle category. Also had a successful entry in Shell Eco Marathon Asia 2013 Sepang, Malaysia (Event postponed by Shell). Our prototype electric car Won “*Best Ecological Footprint*” award at the National Shell Eco Marathon and **first prize** in All-Pakistan project exhibition, organized by IET GIKI Chapter (2013). Was featured on “Voice of America” TV show and national newspapers.
- Selected for a sponsorship for attending the Summer Program on Economic and Enterprise Development at the **National University of Singapore**, Singapore. (2nd – 13th July 2012)
- “**Best Engineering Design**” award, semifinalists, at the National Engineering Robotics Contest (2012) held at the National University of Science and Technology, Pakistan.
- Won the all Pakistan robotics competition organized by IEEE GIKI Chapter (2011).
- Awarded a full merit scholarship for getting **3<sup>rd</sup> position** in the GIKI entry test from over 5000 applicants.
- Represented Pakistan in the **41<sup>st</sup> International Physics Olympiad (IPhO 2010)** held at Zagreb, Croatia.
- Selected amongst the top four students in the 14<sup>th</sup> National Physics Talent Contest (NPTC-14).

### EXTRACURRICULARS

- Webmaster, Graphic Designer at the GIKI WebTeam. Responsible for handling the official GIKI website.
- Microsoft Student Partner (2013-‘14).
- Mentored teams, conducted workshops on robotics and microcontrollers.
- Volunteer, Director of Technology at Project Topi, a student run social welfare organization (2011-‘14).
- Member of the Youth Entrepreneurial Society (YES) at GIKI (2012-‘14).