



## Joyraj Chakraborty

*Address: Boulevard, 1945, 7511AE Enschede, Nederlands*

*Email: [enr.joyraj@outlook.com](mailto:enr.joyraj@outlook.com)*

*Mobile: +31646695473, Skype: enr.joyraj*

*Nationality : Bangladeshi, Birth : 15/07/1985*

---

### CAREER STATEMENT

A well-presented, self-motivated and confident Engineering graduate who has extensive knowledge of how to successfully assess the Electronics and Telecommunications needs of society/industry. And experienced to conduct research and simulate to specific problems. Experienced as a Researcher in Acoustic Localization, LNA design, Sensor, Multi-Band OFDM in optical fiber communication, Radio Frequency (RF) Test engineer on radio network Layer 2 & concept in digital transmission. Background theoretical knowledge on radio receiver structure, different modulation technique and antenna design. Possessing excellent counselling, listening and general communication skills, along with the ability to communicate complex and sensitive information about technical matters in an understandable form to customer. Now looking for suitable position.

---

### RESEARCH INTERESTS

- Sensor networks
- Mixed-signal Integrated Circuit (IC) design
- Acoustic Localization
- Wireless Transceiver Design
- Optical Fiber Communication
- Mobile and wireless networks

---

### RESEARCH EXPERIENCE

04/2014 – 09/2015

KU Leuven, Leuven, Belgium.

#### Researcher

- Early involvement with SINS (Sound interfacing through swarm) project. SINS project is on drastically improved both the lifetime and performance.
- My responsibilities were acoustic localization as a state of an art performance with sensing swarm.
- Mainly using MEMS mic. to record acoustic sound.
- Conduct a research on different localization approaches, reverberation. Made a Matlab simulation to check the performance.
- Bandwidth vs Accuracy, Resolution vs Accuracy.
- Build a real time demo for acoustic localization.

---

12/2013 – 03/2014 Instituto de Telecomunicações, Lisbon, Portugal.

**Researcher**

- Instituto de Telecomunicações (IT) optical fiber Group , is working closely in a cross-functional way with FCT Research project. I was mainly involved on MORFEUS project.
- MORFEUS project consists in the development of a direct-detection metropolitan (metro) network which accomplished multi-band orthogonal frequency division multiplexing (MB-OFDM) signals.
- My responsibilities was doing research and simulate structure of the MB-OFDM signal, the arrangement between the number of bands of the MB-OFDM signal, bandwidth of each OFDM band, bandwidth of the whole MBOFDM signal and the corresponding requirements, spacing between adjacent OFDM bands, number of subcarriers of each band, spectral efficiency investigated.
- Simulate Different SSB MB-OFDM transmitters and receivers adequate for DD systems, and linearized electro-optic converters in Matlab.

---

03/2012 – 01/2013 Blekinge Institute of Technology (BTH),

SE-371 79 Karlskrona, Sweden.

**Research Assistant:** Worked as a research assistant on Digital Communication ,LNA design and power control in cognitive radio.

**EDUCATION**

---

09/2010 – 10/2012 Blekinge Institute of Technology (BTH),  
Karlskrona, Sweden.

**M.Sc. in Electrical Engineering emphasis on Radio Communication.**

*Thesis:* “Optimal Power Control using ANFIS (Adaptive Neuro-Fuzzy Interference System) in Cognitive Radio”

(Cutting edge new approach: Increasing the performance of unlicensed user, using less power on the physical layer.)

*Final mark (CGPA) 3.49 Scale of 4.0*

*Majors:* Research Methodology, Wireless Communication, Wireless Transceiver Design, Radio Communication, Antenna Theory, Applied Signal Processing, Neural Network, Multidimensional Signal Processing.

---

07/2005 – 01/2009 Daffodil International University (DIU), Dhaka,  
Bangladesh.

**B.Sc. in Electronics and Telecommunication Engineering.**

*Thesis:* “Image Denoising using Bilateral Filter and compare with Median Filter”

*Final mark (CGPA) 3.30 Scale of 4.0*

*Selected Coursework:* Electronics Design, VLSI, Digital Electronics, Control System, Broadcast Engineering, Microwave Engineering, Wireless Communication, Industrial Engineering.

## WORK EXPERIENCE

---

- Jan 2013 to Nov 2013                      Deutsche Telekom AG, Bonn.
  - ✓ My responsibilities were early involvement with the product development and in close cooperation with strategic suppliers, analyze system architecture (device).
  
- March 2012 to January 2013    Blekinge Institute of Technology.
  - ✓ Teaching Assistant & Temporary Teacher: Digital Communication
  
- Jan 2010 to Aug 2010                      Metro Global Telecom Services Pvt Ltd, Dhaka Bangladesh
  - ✓ Analysis of signal levels, quality parameters, handover scenarios, Log data of Layer 3 messages.

## TEACHING EXPERIENCE

---

March 2012 to January 2013                      Blekinge Institute of Technology.  
*Couse: Digital communication*

### Responsibilities:

- Correction of lab works and assignments in digital modulation techniques, channel coding, receiver structure. The course deals with radio systems, digital transmission, receiver structure, coding theory, channel capacity theory.
- And helping in research work.

---

April 2008 to December 2008                      Daffodil International University, Dhaka, Bangladesh.

*Couse: Signal Processing One*

### Responsibilities:

- Correction of lab works and assignments in Signal processing in Matlab.

## PUBLICATIONS

---

- Chakraborty J., Ottoy G., Goemaere J.-P., De Strycker L., "Modeling Acoustic Localization Accuracy for Scalable Energy Consumption in Wireless Sensor Swarms" in Proceedings of Ubiquitous Positioning, Indoor Navigation and Location-Based Services, pages 164 - 169, IEEE , Corpus Christi, Texas, USA, 2014.
  
- Chakraborty J., Ottoy G., Gelaude M., Goemaere J.-P., De Strycker L., "Acoustic Localization of unknown Sources with Wireless Sensor Nodes" in Proceeding of the International Conference on Computer and Information Technology (ICCIT) 2014, IEEE ,Dhaka, Bangladesh, 2014.
  
- Chakraborty J., Sundas Sheikh and Wlodek J. Kulesza "Using Hilbert Curve Slot for the Bandwidth Enhancement of Microstrip Patch Antenna" 2nd in IEEE & BTH-Student paper contest, 2011 - 2012.Publisher: IEEE Sweden section.
  
- Chakraborty, J., Varma, J.V.K.C. , Erman, M., "ANFIS based Opportunistic power control for cognitive radio in spectrum sharing" in Proceeding of the International Conference on Electrical Information and Communication Technology (EICT), pages 1 – 6, IEEE , Khulna, Bangladesh, 2014.

## AWARDS

---

<b>2014</b>	FCT Research Grant	Instituto de Telecomunicações, Portugal.
<b>2012</b>	Erasmus Scholarship	Blekinge Institute of Technology, Sweden.
<b>2010</b>	Free Tuition and RA	Blekinge Institute of Technology, Sweden.
<b>2005</b>	50% Scholarship	Daffodil International University, Bangladesh.

## RESEARCH PROJECT

---

### “Applying Matlab to investigate antenna radiation pattern”

The project aimed at investigation of Radiation pattern of microstrip antennas under Matlab environment. The Microstrip antennas own advantages over other types of antennas. They are relatively small, light weight, strong, low cost and can be easily integrated with other microwave circuits. The radiating elements and the feed lines are usually photo etched on the dielectric substrate. The radiating patch may be square rectangular, thin strip, circular, elliptical, triangular or any other configuration. These antennas are compatible with the latest technologies like UTMS, CDMA, LTE etc. Smart antenna technology is one of the hot Research topic in wireless technologies which fully deals with the positioning of antenna, through which the radiation will be effected.”

### “Using Hilbert Curve Slot for Bandwidth Enhancement of Microstrip Patch Antenna”

A standard microstrip patch antenna has narrow bandwidth thus making it inappropriate for many wireless communication systems. Therefore in this paper we present imprinting of Hilbert curve slot on patch antenna to analyze its effects on the bandwidth. Multiple iterations of Hilbert curve are being implemented and relationship between the iterations and bandwidth is studied. It is observed that increase in iteration will result in increase in bandwidth. As the number of iterations increase the total area of the slot decreases, whereas the length of the slot remain the same within the area. The simulated result depicts that -10 dB bandwidth is achieved at 2.4 GHz which is the operable frequency of WLAN and Bluetooth.

---

### “Digital transmission and Radio communication”

Developed a mini project on band pass modulation to plot the average probability of error, calculating the bandwidth requirements and also the effects on increasing the number of symbols in the probability of error in M-ary PSK modulation.

## TECHNICAL SKILLS AND COMPETENCES

---

Programming Languages: Matlab, C, C++. Active –HDL(Basic knowledge). Knowledge on TCP/IP, Internet routing. RF Tools handled: TEMS 8.11 (Ericsson), MAP INFO 8.5. Cisco Certified Network Associates (CCNA from local academy).

## AFFILIATIONS

---

Student member of Institute of Electrical and Electronics Engineers (IEEE).