Naveed Anwar Bhatti

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Sex Male | Date of birth 22/09/1988 | Nationality Pakistani

EDUCATION

November, 2014 – Feb 2018

Ph.D. (Computer Science)
Politecnico di Milano, Milan, Italy

Ph.D. Thesis: *System Support for Transiently-Powered Embedded Sensing Systems*
Advisor: Prof. Luca Mottola

The focus of my doctoral research is to enable transiently-powered embedded sensing devices to make progress across periods of energy unavailability by developing software techniques. As energy availability is likely erratic in ambient harvesting or wireless energy transfer settings, applications may be unpredictably interrupted. To behave dependably, applications should resume from where they left as soon as energy is newly available.

August, 2011 – July 2013
(Gold Medal)

MS (Computer Science)
National University of Computer and Emerging Sciences (FAST-NUCES), Islamabad
MS Thesis: *Long range RF-based ID (LRFID) System: Decoupling sensing and energy in sensor networks using energy transference*
Advisor: Dr. Affan Syed   **Co-Advisor:** Dr. Muhammad Hamad Alizai (LUMS)

▪ Network Security
▪ Cloud computing
▪ Swarm Intelligence

August, 2007 – July 2011

BS (Telecommunication)
National University of Computer and Emerging Sciences (FAST-NUCES), Islamabad
Final Year Project: *Internet controlled unmanned ground vehicle (iUGV)*
Advisor: Dr. Waseem Ikram

▪ Advance Embedded Systems
▪ Wireless and Mobile communication

WORK EXPERIENCE (~6 Years)

Sep, 2019 - Current

Assistant Professor
Air University, Islamabad, Pakistan

April, 2019 – Sep, 2019
(6 months)

Senior Researcher
RISE SICS, Stockholm, Sweden

April, 2018 – March, 2019
(1 year)

ERCIM Alain Bensoussan Post-Doctoral Fellowship
RISE SICS, Stockholm, Sweden

Smart Implicit Interactions:

This project is built around developing a new interface paradigm for IoT called "smart implicit interaction". Implicit interactions stay in the background thriving on data analysis of speech, movements and other contextual data, avoiding unnecessarily disturbing us or grabbing our attention. This project is a collaborated work between researchers from

RISE SICS, Stockholm University and KTH Royal Institute of Technology.

Internet of Things Security:

IoT is now becoming an integrated part of our society's infrastructure. As we become increasingly reliant on IoT systems to perform critical functions, it becomes apparent that security and safety concerns must be taken seriously. An important step is to enable memory isolation, by means of compiler tools, OS mechanisms, and building on a memory-protection unit (MPU) and/or Trusted Execution Environments (TEE). In this project, we investigated security aspects for intermittent computing systems, which form the foundation for the next generation battery-less Internet of Things by using energy harvesting to power their operation.

Feb, 2012 – Oct, 2014
(2 years and 8 months)

Research Associate

SysNet Lab, National University of Computer and Emerging Sciences (FAST-NUCES), Islamabad

Wireless Sensor Networks:
- Hands on experience of installation and configuration of TinyOS.
- Analyse different wireless energy transference techniques that can be used in WSNs.
- Hands on experience on TelosB, Waspmote, Arduino and several others

Botnet Detection:
- Hands on experience of installation and configuration of Bro- Intrusion Detection System.
- Worked on the detection of different kinds bot's and study the life cycle of a botnet.
- Analysis of a 2.7TB (4 days) network trace for botnet detection using Bro-IDS & tshark.
- Lead a team of researchers to deliver a project on real time ISP based detection of botnets.

August 2013- Dec 2013
August 2012- Dec 2012
August 2011- Dec 2011
(1 year and 4 months)

Teacher Assistant of "Advance Embedded Systems" course for MS (TE)

National University of Computer and Emerging Sciences (FAST-NUCES), Islamabad

- Conducted tutorial labs for TelosB, Mbed and MSP430 platforms.
- Supervised course projects.
- Mark Quizzes, Sessionals and Finals

June 2010- July 2010
(6 weeks)

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ACADEMIC SERVICES

2019	▪ Technical Program Committee (TPC) member of IEEE ICPADS'19 Conference
2019	▪ Technical Program Committee (TPC) member of IEEE ISIOT'19 Conference
2019	▪ Technical Program Committee (TPC) member of ACM/IEEE IoTDI'19 Poster/Demo
2019 and 2018	▪ Web and Social Chair of ACM/IEEE IPSN 19 and IPSN 18 conferences
2019	▪ Reviewer Springer Swarm Intelligence
2019	▪ Reviewer IET Electronic Letters
2019, 2018 and 2016	▪ Reviewer IEEE Transactions on Sensor Networks (TOSN)
2015	▪ Reviewer International Journal of Distributed Sensor Networks (IJDSN)
2015	▪ Reviewer ACM Internetware'15 Conference

AWARDS & ACHIEVMENTS

2018	• Recipient of a 12 month ERCIM Alain Bensoussan Postdoc fellowship
2017	• Best Ph.D. Forum Presentation award in International Conference on Information Processing in Sensor Networks (IPSN 2016)
2014	• Recipient of a Ph.D. grant from the Politecnico di Milano
2013	• Recipient of the Gold Medal of MS (CS) graduating class of 2011 (at FAST-NUCES)
2012	• Best Cloud Computing course project Issued by: Microsoft Research and FAST-NUCES Islamabad
2011	• Best Final Year Project BS (Telecom) – Issued by: FAST-NUCES Islamabad
2010	• Winner ROBOTHON Issued by: IEEE GIKI

PUBLICATIONS

TRANSACTION
• Saad Ahmed, **Naveed Anwar Bhatti**, Muhammad Hamad Alizai, Junaid Haroon Siddiqui, Luca Mottola: Fast and Energy-efficient State Checkpointing for Intermittent Computing, **ACM Transactions on Embedded Computing Systems (TECS), 2020, (Impact Factor = 1.72).**

TRANSACTION
• Saad Ahmed, Abu Bakar, **Naveed Anwar Bhatti**, Muhammad Hamad Alizai, Junaid Haroon Siddiqui, Luca Mottola: Demystifying Energy Consumption Dynamics in Transiently-powered Computers, **ACM Transactions on Embedded Computing Systems (TECS), 2020, (Impact Factor = 1.72).**

JOURNAL
• Syeda Sundus Zehra, Rehan Qureshi, Kapal Dev, Saleem Shahid, **Naveed Anwar Bhatti.** "Comparative Analysis of Bio-Inspired Algorithms for Underwater Wireless Sensor Networks", **Wireless Personal Communications, Springer, May 2020. (Impact Factor = 1.2)**

CONFERENCE
• Saad Ahmed, Abu Bakar, **Naveed Anwar Bhatti**, Muhammad Hamad Alizai, Junaid Haroon Siddiqui and Luca Mottola, "*The Betrayal of Constant Power × Time: Finding the Missing Joules of Transiently-Powered Computer*", Languages, Compilers, and Tools for Embedded Systems 2019 (LCTES '19), **June 2019, Arizona (USA)**.

CONFERENCE
• Saad Ahmed, **Naveed Anwar Bhatti**, Muhammad Hamad Alizai, Junaid Haroon Siddiqui and Luca Mottola, "*Efficient Intermittent Computing with Differential Checkpointing*", Languages, Compilers, and Tools for Embedded Systems 2019 (LCTES '19), **June 2019, Arizona (USA)**.

CONFERENCE
• Saad Ahmed, MH Alizai, JH Siddiqui, **Naveed Anwar Bhatti**, L Mottola, "Towards smaller checkpoints for better intermittent computing", ACM/IEEE International Conference on Information Processing in Sensor Networks (IPSN)**, April 2018**, **Porto (Portugal)**.

CONFERENCE
• **Naveed Anwar Bhatti** and Luca Mottola, "*HarvOS: Efficient Code Instrumentation for Transiently-powered Embedded Devices* ", ACM/IEEE International Conference on Information Processing in Sensor Networks (IPSN), **April 2017, Pittsburgh (USA)**.

CONFERENCE
• **Naveed Anwar Bhatti** and Luca Mottola "*Compiler-assisted Automatic Checkpointing for Transiently powered Embedded Devices* ", EWSN, **Feb 2017, Uppsala (Sweden)**.

POSTER
• **Naveed Anwar Bhatti,** "*Back to The Future: Sustainable Transiently Powered Embedded Systems*", **IPSN, April 2016**, Vienna (Austria). **Best PhD Forum Presentation**

TRANSACTION
• **Naveed Anwar Bhatti**, Hamad Alizai, Affan A.Syed and Luca Mottola, "*Energy Harvesting and Wireless Transfer in Sensor Network Applications: Concepts and Experiences* ", **ACM Transactions on Sensor Networks** (TOSN), April **2016. (Impact Factor = 2.7).**

CONFERENCE
• **Naveed Anwar Bhatti**, Luca Mottola," *Efficient State Retention for Transiently-powered Embedded Sensing* ", International Conference on Embedded Wireless Systems and Networks (**EWSN 2016**), **Feb 2016, Graz (Austria)**.

JOURNAL

▪ **Naveed Anwar Bhatti**, Affan A.Syed and Hamad Alizai, "*Laser based Energy Distribution Architecture for Decoupling Energy and Sensing Planes in WSN* ", **International Journal of Distributed Sensor Networks (IJDSN)**, **2015**.

CONFERENCE

▪ Osama Haq, Zainab Abaid, **Naveed Anwar Bhatti**, Zaafar Ahmed and Affan A.Syed, "*SDN-inspired, Real-time Botnet Detection and Flow-blocking at ISP and Enterprise-level* ", IEEE International Conference on Communications (**ICC 2015**), **June 2015, London (UK)**

CONFERENCE

▪ **Naveed Anwar Bhatti**, Affan A.Syed and Hamad Alizai, " *Sensors with Lasers: Building a WSN Power Grid*", The 13th ACM/IEEE Conference on Information Processing in Sensor Networks (IPSN), **April 2014, Berlin (Germany)**.

TALKS AND WORKSHOPS

18th April, 2018

▪ **Transiently-powered Computing Tutorials (11th Cyberphysical Systems week (CPSWEEK) held in Porto, Portugal)**
Tutorial on transiently-powered computing has been presented.

15th April, 2017

▪ **Transiently-powered Embedded Systems (RISE-SICS, Stockholm, Sweden)**
Gave talk on Transiently-powered Embedded Systems: challenges and applications

25th July, 2016

▪ **Internet of things workshop (ComSys lab, RWTH Aachen, Germany)**
Gave talk on Internet of Things Workshop with a focus on transiently-powered sensing systems

28th May , 2015

▪ **Aerial drone showcase at Polifactory (Politecnico di Milano - Campus Bovisa)**
Conducted a workshop to show the potential of drones as tools to enable advanced mobile sensing.

8th June, 2015

▪ **Interactive lecture on embedded sensing (Politecnico di Milano - Campus Bovisa)**
Gave talk on Embedded sensing, which is the technology behind the internet of things, cyberphysical systems, and wireless sensor networks.

STUDENT MENTORSHIP

2020
2019
2019

▪ **Kashif Javed** (Master Student, Air University) – In-progress
▪ **Dragoș Perju** (Master Student, KTH) - Completed
▪ **Erik Henricus Wouters** (Master Student, KTH) - Completed

TECHNICAL SKILLS

Hardware

Atmel SAM L11 (with ARM TrustZone)	WASP Motes	ST Nucleo L152RE	ST Nucleo F091RC
TelosB mote	NXP Mbed LPC1786	Atmel Network Gateway 100	AVR ATMEGA-1
MSP430 Launchpad	Arduino	Raspberry Pi	

Software

TinyOS 2.1.1	Keil uVision v5	VS.NET 2017	Bro 2.1 (NIDS)
Verilogger Pro	Django Web Framework	Atmel Studio 7	PyCharm

Languages

Python	C++	C#	Java
nesC	Matlab	HTML/CSS	SQL

PERSONAL SKILLS

Mother tongue(s)   Urdu

Other language(s)

UNDERSTANDING		SPEAKING		WRITING
Listening	Reading	Spoken interaction	Spoken production	
B2	B2	B2	B2	B2

TOEFL(iBT)   **Score = 100/120**
GRE (iBT)   **Score = 305/340**

Social skills and competences

Working as a post-doctoral researcher at RISE-SICS, I learned the true meaning of "Teamwork". There come many occasions when we have to meet the deadlines in order to deliver a project to our funding agency on time and in such scenario teamwork is the only option to deliver the task efficiently and quickly.

Organisational / managerial skills

- I worked as a Team Lead in SysNet lab on a small project. During this project, I managed a team of three researchers and delivered the project to the funding agency.
- I was the Vice Coordinator of the Creative Department of FAST-NUCES Engineering Society and I managed the decor and promotion of all the major events held under the banner of this society for the year 2010.
- I was also the Vice Coordinator of Robotics Society of FAST-NUCES and conducted many robotics related events, i.e., Robo Race (Line following competition), Robo War etc, for the year 2010/2011.

Artistic skills and competences

GRAPHIC DESIGNING:

I really enjoy designing graphical videos/images using Corel Draw, Adobe CS, Adobe Premier Pro and Google Sketchup (for 3D modelling)

MUSIC:

I also love composing music using Fruity Loops Studio and Piano. Check my webpage.

REFERENCES

- **Dr. Luca Mottola**
  luca.mottola@polimi.it
  Associate Professor
  Dipartimento di Elettronica, Informazione e Bioingegneria
  Politecnico di Milano, Italy

- **Dr. Thiemo Voigt**
  thiemo.voigt@ri.se
  Professor, Group Manager,
  Uppsala University and RISE-SICS,
  Sweden

- **Dr. Hamad Alizai**
  hamad.alizai@lums.edu.pk
  Assistant Professor
  Computer Science Department, LUMS
  Lahore, Pakistan

- **Dr. Affan Syed**
  asyed@alumni.usc.edu
  Director Engineering
  AN10
  Islamabad, Pakistan