JUNAID AHMED KHAN
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RESEARCH INTERESTS

Information/Content Centric Networking (CCN), Autonomous and Connected Vehicles, Internet of Things (IoTs), Fog Networking, Complex/Social Network Analysis.

EDUCATION

Sept 2013-Aug 2016   **UNIVERSITY PARIS-EST MARNE-LA-VALLEE**
Marne-la-Vallée, France
Laboratoire d'Informatique Gaspard Monge - LIGM
Ph.D Computer Science
Thesis: Large scale data collection and storage using smart vehicles: An information-centric approach

Sept 2010- Sept 2013   **NATIONAL UNIVERSITY OF SCIENCE AND TECHNOLOGY - NUST**
Islamabad, Pakistan
School of Electrical Engineering and Computer Science - SEECS
MS Electrical Engineering (Telecom and Computer Networks)
Thesis: Modeling and evaluation of energy storage capacity for harvesting enabled sensors

July 2005-June 2009   **NATIONAL UNIVERSITY OF COMPUTER & EMERGING SCIENCES - NUCES Islamabad, Pakistan**
BS Telecommunication Engineering

RESARCH EXPERIENCE

Oct 2016- Present   **INSTITUT NATIONAL DES SCIENCES APPLIQUÉES - INSA Lyon, France**
Center of Innovation in Telecommunications and Integration of Service – CITI lab
Post-doctoral Researcher: *Inria Agora Team*
Major tasks:
- DGA Project CLOTHO: Energy-efficient self-organization in Internet of Things

June 2016- Oct 2016   **University of California Santa Cruz, CA, USA**
Baskin School of Engineering
Research Fellow: *Computer Engineering Department*
Major tasks:
- Proposing game theoretic based approaches for collaborative cache management and content offloading at social-aware mobile fogs in Content Centric Networks

Jan 2016 – Aug 2016   **University of La Rochelle, La Rochelle, France**
Researcher: *Laboratoire Informatique, Image, Interaction -L3i*
Major tasks:
- Developing algorithms for autonomous decision making for connected vehicles as a step towards self-driving vehicles
- Proposition of socially-aware content storage and distribution schemes using Information-Centric Networking (ICN)

Aug 2013-Dec 2015   **University Paris-Est Marne-la-Vallée, France**
Doctorate Researcher: *Laboratoire d'Informatique Gaspard Monge – LIGM*
Major tasks:

- Using Information Centric Networking for content distribution and sharing in Vehicular Networks (Collaboration with University of La Rochelle, France).
- Distributed urban sensing data collection/retrieval by recruiting smart vehicles employing V2V communications in Vehicular Networks.

Project:
- IETA2 11037 CarCoDe: European Project for the development of platforms for smart car-to-car content delivery in smart cities.

Dec 2013- Dec 2015   **University of La Rochelle, La Rochelle, France**
<u>Invited Researcher:</u> *Laboratoire Informatique, Image, Interaction -L3i*

Sep 2011-May 2013   **School of Electrical Engineering and Computer Science, National University of Science and Technology – SEECS NUST, Islamabad, Pakistan**
<u>Research Assistant:</u> *Wireless and Secure Networks Laboratory - WiSNet*

Major Tasks:
- Energy Efficient and reliable data delivery in Wireless Sensor Networks(WSNs)/Internet of Things (IoTs)
- Energy Provisioning in WSNs/IoTs using renewable energy sources; solar power and wireless energy transference.

PUBLICATIONS

Journals Published:

- Junaid Ahmed Khan and Yacine Ghamri-Doudane, *"SAVING: Socially Aware Vehicular Information-centric Networking"* IEEE Communications Magazine, Aug 2016.
- Junaid Ahmed Khan, Yacine Ghamri-Doudane, Dmitri Botvich, **"Autonomous Identification and Optimal Selection of Popular Smart Vehicles for Urban Sensing - An Information-centric Approach"** *IEEE Transactions on Vehicular Technology, 2016.*
- Junaid Ahmed Khan, Hassaan Khaliq Qureshi, Adnan Iqbal, **"Energy Management in Wireless Sensor Networks: A Survey"**, *Journal of Computers and Electrical Engineering, 2014*

Journals Submitted:

- Junaid Ahmed Khan and Yacine Ghamri-Doudane,, **"A Game-theoretic Solution Towards Fair Recruitment of Connected Vehicles for Urban Data Collection "** *IEEE Transactions on Intelligent Transportation Systems, 2017.*
- Junaid Ahmed Khan and Yacine Ghamri-Doudane, *"Social Welfare Optimization Game to Find and Recruit Vehicles for Content Caching in CCNs"* IEEE Transactions on Mobile Computing, 2017.
- Junaid Ahmed Khan, Yacine Ghamri-Doudane and Cedric Westphal, **"IS-Fog: Information-centric Social-aware Fog Networking for Internet of Everything (IoE)***" IEEE Wireless Communications Magazine, 2017.*

Conferences/Workshops Published:
- Bouziane Brik, Junaid Ahmed Khan, Yacine Ghamri-Doudane, Nasreddine Lagraa and Abderrahmane Lakas, **"GSS-VC: A Game-theoretic Approach for Service Selection in Vehicular Cloud"**. *IEEE CCNC, 2018 (accepted)*
- Junaid Ahmed Khan, Cedric Westphal, Yacine Ghamri-Doudane, **"A Popularity-aware Centrality Metric for Content Placement in Information Centric Networks"**. *IEEE ICNC, 2018 (accepted)*
- Junaid Ahmed Khan, Romain Pujol, Razvan Stanica, Fabrice Valois, **"On the Energy Efficiency and Performance of Neighbor Discovery Schemes for Low Duty Cycle IoT Devices"**. *14th ACM PE-WASUN Workshop (co-located with MSWiM) 2017.*

- Junaid Ahmed Khan, Cedric Westphal and Yacine Ghamri-Doudane, **"Offloading Content with Self-organizing Mobile Fogs***"*, *29th International Telegraphic Congress IEEE ITC29, 2017* .
- Junaid Ahmed Khan, Cedric Westphal and Yacine Ghamri-Doudane, **"A Content-based Centrality Metric for Collaborative Caching in Information-Centric Fogs***"*, *IFIP Networking-Information Centric Fog Computing (ICFC) Workshop, 2017.*
- Junaid Ahmed Khan and Yacine Ghamri-Doudane, **"STRIVE: Socially-aware Three-tier Routing in Information-centric Vehicular Environment***", IEEE Globecom 2016*
- Junaid Ahmed Khan, Yacine Ghamri-Doudane, Dmitri Botvich, **"InfoRank: Information-Centric Autonomous Identification of Popular Smart Vehicles"**, *IEEE Vehicular Technology Conference (IEEE VTC Fall) 2015.*
- Junaid Ahmed Khan, and Yacine Ghamri-Doudane, **"CarRank: An Information-Centric Identification of Important Smart Vehicles for Urban Sensing "**, *14th IEEE International Symposium on Network Computing and Applications, IEEE NCA 2015*
- Junaid Ahmed Khan, Yacine Ghamri-Doudane, Dmitri Botvich, **"GRank - An Information-Centric Autonomous and Distributed Ranking of Popular Smart Vehicles"** *IEEE Globecom 2015.*
- Junaid Ahmed Khan, Yacine Ghamri-Doudane, Ali El Masri, **"Towards the Ranking of Important Smart Vehicles in VANETs - An Information-centric Approach"**, *IEEE CFIP NOTERE 2015.*
- Junaid Ahmed Khan, Hassaan Khaliq Qureshi, Adnan Iqbal. "**TRW: An Energy Storage Capacity Model for Energy Harvesting Sensors in Wireless Sensor Networks**" *IEEE 25th Annual Symposium on Personal, Indoor and Mobile Radio Communications, (IEEE PIMRC 2014).*
- Rehan Qayyum, Junaid Ahmed Khan, Adnan Iqbal. "**Improving Multipath Data Delivery and Energy Efficiency in Few Disjoint Paths Scenario**." *IFIP. IEEE Wireless Days (WD), 2012.*
  - IFIP Student travel grant winner

Conferences Submitted:
- Junaid Ahmed Khan, Cedric Westphal, J.J. Garcia-Luna-Aceves, Yacine Ghamri-Doudane, **"Reversing The Meaning of Node Connectivity for Content Placement in Networks of Caches"**.
- Junaid Ahmed Khan, Cedric Westphal, J.J. Garcia-Luna-Aceves, Yacine Ghamri-Doudane, **"Towards A Scalable Information-Centric Approach to Cache Management"**.
- Bouziane Brik, Junaid Ahmed Khan, Yacine Ghamri-Doudane, Nasreddine Lagraa, and Abderrahmane Lakas, **"GSS-VC: A Game-theoretic Approach for Service Selection in Vehicular Cloud"**.

Workshops without proceedings:

- Junaid Ahmed Khan and Yacine Ghamri-Doudane, **"CarRank: An Information-Centric Distributed Ranking Algorithm for Popular Smart Vehicles ,** *7th REVE, EURECOM Sophia Antipolis, France 19-20, March 2015*
- Junaid Ahmed Khan and Yacine Ghamri-Doudane, **"Autonomous Identification and Optimal Selection of Popular Smart Vehicles for Urban Sensing- An Information-centric Approach"**, *8th REVE, UTC Compiegne, France, 10-11, March 2016*
- Junaid Ahmed Khan and Yacine Ghamri-Doudane, **"STRIVE: Socially-aware Three-tier Routing in Information-centric Vehicular Environment***", 1st Smart City Day, INRIA Sophia Antipolis, France, 11 January 2017*
- Junaid Ahmed Khan and Yacine Ghamri-Doudane, ***"SAVING: Socially Aware Vehicular Information-centric Networking"*** *Journées non-thématiques RESCOM, INRIA Sophia Antipolis, France, 12-13 January 2017.*

TEACHING EXPERIENCE
Oct 2016 – Present   **Institut National des Sciences Appliquées - INSA Lyon, France**
                                Telecommunications Department

Courses: *Advanced Computer Networks, Mobile Network Architecture, Network (socket) Programming, CS-Telecom Passport*

Jan 2016- Aug 2016 **University of La Rochelle, La Rochelle, France**
Courses: *Computer Networks, Network Security, Database Management*

PROJECTS

French National Project DGA CLOTHO: Post-doctoral Researcher
- Designing and Development of energy-efficient self organization of energy scare object in the context of Internet of Things (IoTs).
- Distributed data collection from sensors with ultra-low duty cycles using LoRaWAN/Sigfox interfaces.

European Project- IETA2 11037 CarCoDe: Doctorate Researcher
- Designing and developing algorithms and protocols for efficient content sharing and synchronizing between cars using smart vehicles by utilizing V2V communication in a smarter city environment.
- Development of android-based in-vehicle platform **"City Eyes"** for urban sensing using smart vehicles

Final Year Project: BS Telecommunications Engineering
- Design of a power aware wireless sensor node using Texas Instruments CC2431 kit
- Deployment of an automatic meter reading system using ZigBee (IEEE 802.15.4) enabled MicaZ sensor nodes

INDUSTRY EXPERIENCE

Feb 2010-Mar 2011 **National Telecommunication Corporation (NTC) HQs, Islamabad, Pakistan**
<u>NIP Trainee</u> at Network and System Engineering Department
Key responsibilities:
- Involved in designing of the technical specifications, verification and processing of PAT documents for vendors.
- Monitoring of the NMS of ZTE ZXJ10 Switches located at remote locations.
Major Projects:
- Installation of 5500 DSLAMs by M/S COMSYS at countrywide NTC sites.
- Installation of Huawei MSAG at different sites for NTC
- Testing and evaluation of ZTE ZXJ10.

July 2008-Sept 2008 **Pakistan Telecommunication Company Limited (PTCL), Islamabad, Pakistan**
<u>Internship</u> in the Switching Department
- **OMC monitoring of the Siemens EWSD Switch station.**

TRAININGS & CERTIFICATIONS

14-18 July 2014 **International Summer School on Complex Networks**
Bertinoro, Italy

Oct 2009-Jan 2010 **Cisco Certified Network Associate (CCNA)**
CSCO ID: CSCO12078338
Cisco Regional Academy IQRA University, Islamabad, Pakistan

MAJOR COURSES

- **Communication & Networks:** Wireless Communication and Networks, Wireless Ad-Hoc and Sensor Networks, Advanced Computer Networks, Network Performance analysis, Advanced Digital

Communication, Information Theory & Coding, Data Communication, Satellite Communications, Digital Signal Processing, Telecommunication Transmission and Switching Systems.

- **Basic System Engineering:** Probability & Stochastic Process, Multivariable Calculus, Linear Algebra & Differential Equations and Electromagnetic Theory.
- **Hardware:** Electrical & Electronic Circuits, Digital Logic Design, Computer Architecture, Micro Processor Interfacing, Wave Propagation & Antenna Theory, Microwave Engineering, Feedback Control Systems.
- **Computer Science (Theory):** Discrete Optimization, Chaos Theory, Analytic combinatorics, Performance Modeling & Simulation, Game Theory, Machine Learning, Statistical Data (Big-Data) Analysis,
- **Computer Science (Programming):** Object Oriented in C++, Java, Data Structures and Algorithms, Assembly Language, Socket Programming, Operating Systems.

TECHNICAL SKILLS

- NS2/NS3, Visual C/C++, Java, Android, PHP MySQL, Python, OPNET, Omnet++, MATLAB, R, VERILOG, PSPICE, Multisim, AutoCAD, GNS3, Wireshark, Packet Tracer, LATEX, Verilog, TinyOS (NesC), LINUX, MICROWIND DSCH, MASM.

PROFESSIONAL ACTIVITIES

- Collaboration (50%) for the Ph.D thesis of
  - Nov 2016 – Present: Mr. Bouziane Brik of University of La Rochelle, France, ogether with Prof. Yacine Ghamri-Doudane
  - Feb 2017 – Present: Ms Manel Khaou of Université de SFAX, Tunisia, together with Prof. Yacine Ghamri-Doudane and Ms. Lamia Chaari Fourati
- Co-supervision for the masters thesis:
  - April 2015 - Aug 2015: Ms. Rim-el-Fahem *(graduated September 2015 SUPCOM, Tunis Tunisia)*
- TPC Member: IEEE ICC 2018, IEEE International Smart Cities Conference (ISC2) 2017
- Reviewer: IEEE Transactions on Vehicular Technology, IEEE Transactions on Intelligent Transportations Systems, Elsevier Journal of Network and Computer Applications (JNCA), Journal of Computers of Electrical Engineering, Annals of Telecommunications Journal, IEEE ICC'14-17 WCNC'14-16 Globecom'14-17 VTC Spring'14,15 VTC Fall'14,15, LCN'14, IM'15; SPECTS'14, ITC'14, MILCOM'14, IFIP WD'13-17.
- Participated in 3rd annual JIDAP'13, 27-28 November'13, Université de La Rochelle, France
- Participated in 6th Journée des Doctorants, 4th June'14, Univeristé Paris-Est Marne-la-Vallée, France
- Member IEEE (Institute of Electrical and Electronics Engineers) and VTS (Vehicular Technology Society)
- Member of organizing committee NASCON at NUCES-FAST Islamabad, Pakistan

REFERENCES

- Yacine Ghamri-Doudane
  Professor (Thesis Supervisor and Director L3i Lab),
  University of La Rochelle, La Rochelle, France
  yacine.ghamri@univ-lr.fr
- Cedric Westphal
  Assistant Adjunct Professor,
  Baskin School of Engineering
  University of California, Santa Cruz, CA, USA

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  Inria Agora research group
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