Department of Electronic and Computer Engineering
IBC Block 2, University of Limerick
Limerick, Ireland (V94 Y985)
sub.halder@gmail.com | subir.halder@ul.ie
Webpage : https://sites.google.com/site/subhalder/
+353-8998-72115

Subir Halder

MARIE SKODOWSKA-CURIE ACTION (MSCA) FELLOW, ELECTRONIC & COMPUTER ENGINEERING, UNIVERSITY OF LIMERICK, IRELAND

EDUCATION

PhD in Computer Science and Technology *2010 - 2015*
Thesis Title: Energy-Efficient Node Deployment in Wireless Sensor Networks
Indian Institute of Engineering Science and Technology, Shibpur, India

Master of Technology in Computer Science and Engineering *2004 - 2006*
Kalyani Government Engineering College, Kalyani, India, **Grade: 8.04/10** (First Class)

Bachelor of Technology in Electronics and Communication Engineering *1999 - 2003*
Kalyani Government Engineering College, Kalyani, India, **Grade: 78.49/100** (First Class)

WORK EXPERIENCE

Marie Skodowska-Curie Fellow *2021 - Present*
Department of Electronic and Computer Engineering, University of Limerick, Ireland, *My project as MSCA fellow:*

- ASSURANCE: Cyber Attack Resilient Data Security Solutions for Smart Manufacturing Ecosystem

Post-Doctoral Research Fellow *2017 - 2021*
Department of Mathematics, University of Padua, Italy, *Tasks*: Technical and administrative activities for the following projects:

- LOCARD: Lawful Evidence Collecting and Continuity Platform Development, *Funded by European Commission under H2020-SU-SEC-2018, 2019-2022.*
- Security and Privacy of Cloud-Based Internet of Things: Issues and Challenges, *Funded by TagItSmart Project under EU H2020, 2018-2019.*
- Secure Remote Over-The-Air Updates for Connected Cars, *Funded by Huawei Technologies Co. Ltd., Singapore under Huawei Innovation Research Program, 2018-2019.*
- TagItSmart!-Smart Tags Driven Service Platform for Enabling Ecosystems of Connected Objects, *Funded by European Commission under H2020-ICT30-2015, 2016-2018.*

Assistant Professor *2015 - 2017*
Department of Computer Science and Engineering, Dr. B. C. Roy Engineering College, Durgapur, WB, India

Senior Lecturer *2009 - 2010*
Department of Computer Science and Engineering, Dr. B. C. Roy Engineering College, Durgapur, WB, India

Lecturer *2007 - 2008*
Department of Computer Science and Engineering, Dr. B. C. Roy Engineering College, Durgapur, WB, India

Lecturer *2006 - 2007*
Department of Computer Science and Engineering, Murshidabad College of Enginnering and Technology, Berhampore, WB, India

RESEARCH INTERESTS

- Security and Privacy Solutions for IoT, Cloud Computing, Autonomous Vehicle, Controller Area Network, Cyber Physical Systems
- Homomorphic Encryption for Low-Power IoT Devices
- Design and Analysis of Camera Sensor Networks, Cyber Physical Systems

TECHNICAL SKILLS

Programming Languages
C/C++, Python, Contiki, Java, MATLAB

Software and Tools
CloudSim, TensorFlow, Wireshark, CPLEX, CVX, LaTeX

Honors and Awards

Travel Fellowship Awards *2015*
Travel fellowship recipient for attending the 15th International Conference on Algorithms and Architectures for Parallel Processing (ICA3PP), Zhangjiajie, China, November 2015, Funded by SERB under DST, Government of India.

2012
Travel fellowship recipient for attending the 15th ACM International Conference on Modeling, Analysis and Simulation of Wireless and Mobile Systems (MSWiM), Paphos, Cyprus, October, 2012, Funded by SERB under DST, Government of India.

Best Paper Awards *2019*
Best paper award in the ACM-DADS track and runner up for the best paper in the 34th ACM Symposium on Applied Computing (SAC), Limassol, Cyprus.

2013
Distinguished paper award in the 13th International Conference on Algorithms and Architectures for Parallel Processing (ICA3PP), Vietri sul Mare, Italy.

2011
Best paper award in the 2nd IEEE International Conference on Wireless Communications, Vehicular Technology, Information Theory and Aerospace & Electronics Systems Technology (IEEE Wireless VITAE), Chennai, India.

Best Paper Candidate *2009*
International Conference on Future Generation Information Technology (FGIT), Jeju Island, South Korea.

Miscellaneous Award *2004*
MHRD under Government of India scholarship for Postgraduate Degree (Master of Technology), 2004-2006.

Professional Activities

Membership in Professional Organization *2021*
Member of Marie Curie Alumni Association.

Conference/Session Organizer *2013*
Security Protection Mechanisms in Wireless Sensor Networks in conjunction Globa Wireless Summit (GWS), New Jersey, USA.

2012
IEEE National Conference on Computing and Communication Systems, Durgapur, India.

Technical Session Chair *2015*
15th International Conference on Algorithms and Architectures for Parallel Processing (ICA3PP), China.

Conference Committee Member
TPC: DependSys, 2017-19, AIoTS 2020 (Co-located with ACNS 2020).

Reviewer for Journals (Selected List) *2012-Present*
IEEE TPDS, IEEE TIFS, IEEE/ACM TON, ACM TOSN, IEEE TNSM, PMC, JNCA, WINET, ACM TCPS, IEEE TITS.

Presentations/Talks *2012-Present*
- ACM ICDCN, Kolkata, India, 2020
- IEEE ICCCN, Valencia, Spain, 2019
- ACM SAC, Limassol, Cyprus, 2019
- ICA3PP, Zhangjiajie, China, 2015
- ICDCIT, Bhubaneswar, India, 2015
- ACM MSWiM, Phapos, Cyprus, 2012

Publications

Refereed Journals
[J21] **S. Halder**, M. Conti, S. K. Das, A Holistic Approach to Power Efficiency in a Clock Offset Based Intrusion Detection Systems for Controller Area Networks, In **(Elsevier) Pervasive and Mobile Computing**, in press, 2021.

[J20] **S. Halder**, M. Conti, CrypSH: A Novel IoT Data Protection Scheme Based on BGN Cryptosystem, In **(IEEE) Transactions on Cloud Computing**, in press, DOI: 10.1109/TCC.2021.3050953, 2021.

[J19] A. Bhardwaj, V. Mangat, R. Vig, **S. Halder**, M. Conti, Distributed Denial of Service Attacks in Cloud: State-of-the-Art Scientific and Commercial Solutions, In **(Elsevier) Computer Science Review**, 39, pp. 1-28, article no. 100332, 2021.

[J18] A. Ghosal, S. U. Sagong, **S. Halder**, K. Sahabandu, M. Conti, R. Poovendran, L. Bushnell, Truck Platoon Security: State-of-the-Art and Road Ahead, In **(Elsevier) Computer Networks**, 185, pp. 1-20, article no. 107658, 2021.

[J17] **S. Halder**, A. Ghosal, M. Conti, Secure Over-The-Air Software Updates in Connected Vehicles: A Survey, In **(Elsevier) Computer Networks**, 178, pp. 1-19, article no. 107343, 2020.

[J16] A. Ghosal, **S. Halder**, S. K. Das, Distributed On-Demand Clustering Algorithm for Lifetime Optimization in Wireless Sensor Networks, In **(Elsevier) Journal of Parallel and Distributed Systems**, 141, pp. 129-142, 2020.

[J15] **S. Halder**, A. Ghosal, M. Conti, Efficient Physical Intrusion Detection in Internet of Things: A Node Deployment Approach, In **(Elsevier) Computer Networks**, 154, pp. 28-46, 2019.

[J14] **S. Halder**, A. Ghosal, M. Conti, LiMCA: An Optimal Clustering Algorithm for Lifetime Maximization of Internet of Things, In **(ACM/Springer) Wireless Networks**, 25(8), pp. 4459-4477, 2019.

[J13] A. Ghosal, **S. Halder**, Lifetime Optimizing Clustering Structure using Archimedes Spiral based Deployment in WSNs, In **(IEEE) Systems Journal**, 11(2), pp. 1039-1048, 2017.

[J12] A. Ghosal, **S. Halder**, A Survey on Energy Efficient Intrusion Detection in Wireless Sensor Networks, In **(IOS) Journal of Ambient Intelligence and Smart Environments**, 9(2), pp. 239-261, 2017.

[J11] **S. Halder**, A. Ghosal, Lifetime Enhancement of Wireless Sensor Networks by Avoiding Energy-Holes with Gaussian Distribution, In **(Springer) Telecommunication Systems**, 64(1), pp. 113-133, 2017.

[J10] A. Ghosal, **S. Halder**, S. Chessa, Secure Key Design Approaches using Entropy Harvesting in Wireless Sensor Network: A Survey, In **(Elsevier) Journal of Network and Computer Applications**, 78, pp. 216-230, 2017.

[J9] **S. Halder**, A. Ghosal, A Survey on Mobile Anchor Assisted Localization Techniques in Wireless Sensor Networks, In **(ACM/Springer) Wireless Networks**, 22(7), pp. 2317-2336, 2016.

[J8] **S. Halder**, A. Ghosal, A Location-wise Predetermined Deployment for Optimizing Lifetime in Visual Sensor Networks, In **(IEEE) Transactions on Circuits and Systems for Video Technology**, 26(6), pp. 1131-1145, 2016.

[J7] A. Ghosal, **S. Halder**, Lifespan Prolonging Location-wise Predetermined Deployment Strategy for Visual Sensor Networks, In **(Elsevier) Journal of Network and Computer Applications**, 63, pp. 86-97, 2016.

[J6] **S. Halder**, A. Ghosal, A Survey on Mobility-Assisted Localization Techniques in Wireless Sensor Networks, In **(Elsevier) Journal of Network and Computer Applications**, 60 (2016), pp. 82-94, 2016.

[J5] **S. Halder**, S. DasBit, Design of an Archimedes Spiral based Node Deployment Scheme Targeting Enhancement of Network Lifetime in Wireless Sensor Networks, In **(Elsevier) Journal of Network and Computer Applications**, 47, pp. 147-167, 2015.

[J4] **S. Halder**, S. DasBit, Design of a Probability Density Function Targeting Energy-Efficient Node Deployment in Wireless Sensor Networks, In **(IEEE) Transactions on Network and Service Management**, 11(2), pp. 204-219, 2014.

[J3] **S. Halder**, S. DasBit, Enhancement of Wireless Sensor Network Lifetime by Deploying Heterogeneous Nodes, In **(Elsevier) Journal of Network and Computer Applications**, 38, pp. 106-124, 2014.

[J2] A. Ghosal, **S. Halder**, S. DasBit, A Dynamic TDMA Based Scheme for Securing Query Processing in WSN, In **(ACM/Springer) Wireless Networks**, 18(2), pp. 165-184, 2012.

[J1] **S. Halder**, A. Ghosal, S. DasBit, A Pre-determined Node Deployment Strategy to Prolong Network Lifetime in WSN, In **(Elsevier) Computer Communication**, 34(11), pp. 1294-1306, 2011.

Refereed Conferences

[C19] A. Ghosal, **S. Halder** and M. Conti, STRIDE: Scalable and Secure Over-The-Air Software Update Scheme for Autonomous Vehicles, In *Proc. of 54th IEEE Int'l Conference on Communications (**IEEE ICC**)*, pp. 1-6, Jun 2020.

[C18] **S. Halder**, M. Conti, S. K. Das, COIDS: A Clock Offset Based Intrusion Detection System for Controller Area Networks, In *Proc. of 21st ACM Int'l Conf. on Distributed Computing and Networking (**ACM ICDCN**)*, pp. 1-10, Jan 2020.

[C17] A. Ghosal, **S. Halder**, M. Conti, DISC: A Novel Distributed On-Demand Clustering Protocol for Internet of Multimedia Things, In *Proc. of 28th IEEE Int'l Conf. on Computer Communications and Networks (**IEEE ICCCN**)*, pp. 1-9, Jul 2019.

[C16] **S. Halder**, M. Conti, Don't Hesitate to Share! A Novel IoT Data Protection Based on BGN Cryptosystem, In *Proc. of 34th ACM Symposium on Applied Computing (**ACM SAC**)*, pp. 282-289, Apr 2019.

[C15] **S. Halder**, A. Ghosal, A Predetermined Deployment Technique for Lifetime Optimization in Clustered WSNs, In *Proc. of 15th Int'l Conf. on Algorithms and Architectures for Parallel Processing (**ICA3PP**)*, LNCS, vol. 9531, pp. 682-696, Nov 2015.

[C14] **S. Halder**, A. Ghosal, Lifetime Optimizing Clustering Structure using Archimedes Spiral based Deployment in WSNs, In *Proc. of 14th IFIP/IEEE Symposium on Integrated Network and Service Management (**IFIP/IEEE IM**)*, pp. 592-598, May 2015.

[C13] A. Ghosal, **S. Halder**, Intrusion Detection in a Tailor-Made Gaussian Distribution Wireless Sensor Networks, In *Proc. of 11th Int'l Conf. on Distributed Computing and Internet Technology (**ICDCIT**)*, LNCS, vol. 8956, pp. 325-330, Feb 2015.

[C12] A. Ghosal, **S. Halder**, Tailor-Made Gaussian Distribution for Intrusion Detection in Wireless Sensor Networks, In *Proc. of 11th IEEE Int'l Conf. on Ubiquitous Intelligence and Computing (**IEEE UIC**)*, pp. 406-411, Dec 2014.

[C11] **S. Halder**, A. Ghosal, Enhancing the Lifespan of Visual Sensor Networks using a Predetermined Node Deployment Strategy, In *Proc. of 19th IEEE Int'l Symposium on Computers and Communications (**IEEE ISCC**)*, pp. 1-6, Jun 2014.

[C10] **S. Halder**, A. Ghosal, Is Sensor Deployment using Gaussian Distribution Energy Balanced?, In *Proc. of 13th Int'l Conf. on Algorithms and Architectures for Parallel Processing (**ICA3PP**)*, LNCS, vol. 8285, pp. 58-71, Dec 2013.

[C9] **S. Halder**, S. DasBit, A Lifetime Enhancing Node Deployment Strategy using Heterogeneous Nodes in WSNs for Coal Mine Monitoring, In *Proc. of 15th ACM Int'l Conf. on Modeling, Analysis and Simulation of Wireless and Mobile Systems (**ACM MSWiM**)*, pp. 117-124, Oct 2012.

[C8] S. Dan, **S. Halder**, S. DasBit, Localization with Enhanced Location Accuracy using RSSI in WSN, In *Proc. of 5th IEEE Int'l Conf. on Advanced Networks and Telecommunication Systems (**IEEE ANTS**)*, pp. 1-6, Dec 2011.

[C7] **S. Halder**, A. Ghosal, A. Saha, S. DasBit, Energy-Balancing and Lifetime Enhancement of Wireless

Sensor Network with Archimedes Spiral, In *Proc. of 8th Int'l Conf. on Ubiquitous Intelligence and Computing (**UIC**)*, LNCS, vol. 6905, pp. 420-434, Sep 2011.

[C6] **S. Halder**, A. Ghosal, A. Chowdhuty, S. DasBit, A Probability Density Function for Energy-Balanced Lifetime-Enhancing Node Deployment in WSN, In *Proc. of 11th Int'l Conf. on Computational Science and its Application (**ICCSA**)*, LNCS, vol. 6785, pp. 472-487, Jun 2011.

[C5] A. Ghosal, **S. Halder**, Md. Mobashir, R. K. Saraogi, S. DasBit, A Jamming Defending Data-Forwarding Scheme for Delay Sensitive Applications in WSN, In *Proc. of 2nd Int'l Conf. Wireless VITAE*, pp. 1-5, Feb 2011.

[C4] A. Ghosal, **S. Halder**, S. Sur, A. Dan, S. DasBit, Ensuring Basic Security and Preventing Replay Attack in a Query Processing Application Domain in WSN, In *Proc. of 10th Int'l Conf. on Computational Science and its Application (**ICCSA**)*, LNCS, vol. 6018, pp. 321-335, Mar 2010.

[C3] A. Ghosal, **S. Halder**, S. Chatterjee, J. Sen, S. DasBit, Estimating Delay in a Data Forwarding Scheme for Defending Jamming Attack in Wireless Sensor Network, In *Proc. of 3rd Int'l Conf. on Next Generation Mobile Applications, Services and Technologies (**NGMAST**)*, pp. 351-356, Sep 2009.

[C2] **S. Halder**, A. Ghosal, S. Sur, S. Dan, S. DasBit, A Lifetime Enhancing Node Deployment Strategy in WSN, In *Proc. of 1st Int'l Conf. on Future Generation Information Technology (**FGIT**)*, LNCS, vol. 5899, pp. 296-308, Dec 2009.

[C1] A. Ghosal, **S. Halder**, S. DasBit, Channel Surfing- A Scheme to Tolerate Jamming in Multiple nodes in Wireless Sensor Network, In *Proc. of 1st Int'l Conf. Wireless VITAE*, pp. 948-951, May 2009.

Book Chapters

[BC5] A. Ghosal, **S. Halder**, Building Intelligent System for Smart Cities: Issues, Challenges and Approaches, In *Smart Cities: Development and Governance Frameworks (Editor: Z. Mahmood)*, ISBN 978-3-319-76668-3, Chapter 5, Springer Publication, pp. 107-125, 2018.

[BC4] A. Ghosal, **S. Halder**, Security in Mobile Wireless Sensor Networks: Attacks and Defenses, In *Cooperative Robots and Sensor Networks-III (Editors: A. Koubaa and J. R. M. Dios)*, ISBN 978-3-319-18298-8, Chapter 9, Springer Publication, pp. 185-205, 2015.

[BC3] **S. Halder**, A. Ghosal, Mobility-Assisted Localization Techniques in Wireless Sensor Networks: Issues, Challenges and Approaches, In *Cooperative Robots and Sensor Networks-II (Editors: A. Koubaa and A. Khelil)*, ISBN: 978-3-642-55029-4, Chapter 3, Springer-Verlags Publication, pp. 43-64, 2014.

[BC2] **S. Halder**, A. Ghosal, Cross Layer-Based Intrusion Detection Techniques in Wireless Networks: A Survey, In *The State of the Art in Intrusion Prevention and Detection (Editor: A. S. K. Pathan)*, ISBN: 978-1-482-20351-6, Chapter 15, CRC Press, Taylor & Francis Group, USA, pp. 361-389, 2014.

[BC1] A. Ghosal, **S. Halder**, Intrusion Detection in Wireless Sensor Networks: Issues, Challenges and Approaches, In *Wireless Networks and Security (Editors: S. Khan and A. S. K. Pathan)*, ISBN: 978-3-642-36169-2, Chapter 10, Springer-Verlags Publication, pp. 329-367, 2013.

Patent

[P1] H. Y. Lin, M. Conti, A. Ghosal, **S. Halder**, *Policy-based Automotive Secure Over-the-air Update*, Patent Application Number: PCT/CN2019/117399, Filed on November 12, 2019, China.

REFEREES

Dr. Mauro Conti, Full Professor
Department of Mathematics, University of Padua, via Trieste 63, Padua-35121, Italy; E-mail: conti@math.unipd.it; Phone: +39 049 827 1488.

Dr. Sajal K. Das, Professor and Daniel St. Clair Endowed Chair

Department of Computer Science, Missouri University of Science and Technology, MO 65409-0350, USA; E-mail: sdas@mst.edu; Phone: +1 573 341 7708.

Dr. Thomas Newe, Associate Professor
Department of Electronic and Computer Engineering, University of Limerick, Limerick, Ireland; E-mail: thomas.newe@ul.ie; Phone: +353 61 202 092.

Dr. Stefano Chessa, Full Professor
Department of Computer Science, University of Pisa, via Largo Pontecorvo 3, Pisa-56100, Italy; E-mail: stefano.chessa@unipi.it; Phone: +39 050 221 3122.