

# Gopika Premshankar

---

## Education

- 2015 – 2020 **Doctor of Science (Tech.)**, Department of Computer Science,  
*Aalto University*, Finland  
*Supervisor: Prof. Mario Di Francesco, advisor: Prof. Tarik Taleb*  
*Dissertation: Scalable networked systems: analysis and optimization*
- 2013 – 2015 **Master of Science (Tech.) with distinction**, Department of Computer Science,  
*Aalto University*, Finland  
Graduated with distinction  
*Thesis: Design and implementation of a distributed MME on OpenStack*
- 2006 – 2010 **Bachelor of Technology**, Department of Electrical and Electronics Engineering,  
*National Institute of Technology Karnataka*, Surathkal, India

---

## Professional Experience

- Feb '21 – **Postdoctoral researcher**, *Ivey Business School, Western University*, London, ON, Canada.  
Project: Scalable and energy-efficient networked systems at the edge  
Supervisor: [Prof. Bissan Ghaddar](#)
- Apr '20 – Jan '21 **Postdoctoral researcher**, *Aalto University*, Espoo, Finland.  
Project: Modeling LoRa networks  
Supervisor: [Prof. Mario Di Francesco](#)
- Sep – Dec '19 **Research intern**, *Nokia Bell Labs*, Dublin, Ireland.  
Project: Data-driven approach to improve energy efficiency of cellular base stations  
Supervisor: [Dr. Diego Lugones](#)
- Jun – Sep '19 **Visiting PhD student**, *Duke University*, Durham, NC, USA.  
Project: Investigation of networking challenges for augmented reality applications  
Host: [Prof. Maria Gorlatova](#)
- May '18 **Visiting PhD student**, *National Chiao Tung University*, Hsinchu, Taiwan.  
Two week visit to exchange ideas related to edge computing and Internet of Things  
Host: [Prof. Yu-Chee Tseng](#)
- May – Sep '16 **Research intern**, *IBM Research*, Dublin, Ireland.  
Project: Edge computing for vehicular applications in smart cities  
Host: [Prof. Bissan Ghaddar](#)
- 2011 – 2013 **Software engineer**, *Cisco Systems India Private Limited*, Bangalore, India.  
Test engineer for mobile packet core network elements  
Developed deep understanding of LTE networks and telecommunications industry
- 2010 – 2011 **Associate software engineer**, *Accenture*, Bangalore, India.  
Application developer in pharmaceutical and life sciences division

---

## Research funding

- Feb '21 – Jan '22 **Scalable and Energy-efficient Networked Systems at the Edge**, postdoc pooli  
(Finnish Cultural Foundation), Principal investigator, Award amount: 52,000 EUR

The project establishes energy-efficiency as a fundamental metric in designing and deploying applications in edge data centers. The goal is to devise new optimization models to allocate resources in data centers such that energy consumed is minimized.

## Publications

### Journals

- [J3] B. Jedari, G. Premsankar, G. Illahi, M. Di Francesco, A. Mehrabi, and A. Ylä-Jääski. Video Caching, Analytics and Delivery at the Wireless Edge: A Survey and Future Directions. In: *IEEE Communications Surveys & Tutorials* 23.1 (2021), pp. 431–471. DOI: [10.1109/COMST.2020.3035427](https://doi.org/10.1109/COMST.2020.3035427). **Impact factor: 23.7.**
- [J2] G. Premsankar, B. Ghaddar, M. Slabicki, and M. Di Francesco. Optimal configuration of LoRa networks in smart cities. In: *IEEE Transactions on Industrial Informatics* (2020). DOI: [10.1109/TII.2020.2967123](https://doi.org/10.1109/TII.2020.2967123). **Impact factor: 9.112.**
- [J1] G. Premsankar, M. Di Francesco, and T. Taleb. Edge computing for the Internet of Things: A case study. In: *IEEE Internet of Things Journal* 5.2 (2018), pp. 1275–1284. DOI: [10.1109/JIOT.2018.2805263](https://doi.org/10.1109/JIOT.2018.2805263). **Impact factor: 9.936.**

### Book chapter

- [B1] G. Premsankar and M. Di Francesco. Advances in Cloud Computing, Wireless Communications and the Internet of Things. In: *Analytics for the Sharing Economy: Mathematics, Engineering and Business Perspectives*. Springer, 2020, pp. 71–94. DOI: [10.1007/978-3-030-35032-1\\_6](https://doi.org/10.1007/978-3-030-35032-1_6).

### Conferences

- [C7] V. Toro-Betancur, G. Premsankar, M. Slabicki, and M. Di Francesco. Modeling communication reliability in LoRa networks with device-level accuracy. In: *IEEE International Conference on Computer Communications (INFOCOM) 2021*, Accepted, **Acceptance rate: 19.9%.**
- [C6] G. Premsankar, B. Ghaddar, M. Di Francesco, and R. Verago. Efficient placement of edge computing devices for vehicular applications in smart cities. In: *NOMS 2018-2018 IEEE/IFIP Network Operations and Management Symposium*. IEEE. 2018, pp. 1–9. DOI: [10.1109/NOMS.2018.8406256](https://doi.org/10.1109/NOMS.2018.8406256). **Best student paper award.**
- [C5] S. K. Mohanty, G. Premsankar, and M. Di Francesco. An Evaluation of Open Source Serverless Computing Frameworks. In: *CloudCom*. 2018, pp. 115–120. DOI: [10.1109/CloudCom2018.2018.00033](https://doi.org/10.1109/CloudCom2018.2018.00033).
- [C4] M. Slabicki, G. Premsankar, and M. Di Francesco. Adaptive configuration of LoRa networks for dense IoT deployments. In: *NOMS 2018-2018 IEEE/IFIP Network Operations and Management Symposium*. IEEE. 2018, pp. 1–9. DOI: [10.1109/NOMS.2018.8406255](https://doi.org/10.1109/NOMS.2018.8406255).
- [C3] S. Bayhan, G. Premsankar, M. Di Francesco, and J. Kangasharju. Mobile content offloading in database-assisted white space networks. In: *International Conference on Cognitive Radio Oriented Wireless Networks*. Springer. 2016, pp. 129–141. DOI: [10.1007/978-3-319-40352-6\\_11](https://doi.org/10.1007/978-3-319-40352-6_11).

- [C2] G. PremSankar, K. Ahokas, and S. Luukkainen. Design and implementation of a distributed mobility management entity on OpenStack. In: *2015 IEEE 7th International Conference on Cloud Computing Technology and Science (CloudCom)*. IEEE. 2015, pp. 487–490. doi: [10.1109/CloudCom.2015.54](https://doi.org/10.1109/CloudCom.2015.54). Short paper.
- [C1] J. Costa-Requena, J. L. Santos, V. F. Guasch, K. Ahokas, G. PremSankar, S. Luukkainen, O. L. Pérez, M. U. Itzazelaia, I. Ahmad, M. Liyanage, et al. SDN and NFV integration in generalized mobile network architecture. In: *2015 European conference on networks and communications (EuCNC)*. IEEE. 2015, pp. 154–158. doi: [10.1109/EuCNC.2015.7194059](https://doi.org/10.1109/EuCNC.2015.7194059).

## Talks and presentations

- 22/03/2021 Invited (virtual) guest lecture: Infrastructure for edge computing, [Spring 2021: Edge Computing](#), *Duke University*, NC, USA
- 05/08/2019 Elevator pitch: towards scalable communication networks, NeTS Early Career Work shop 2019, *National Science Foundation*, Arlington, VA, USA
- 11/10/2018 Demo: long range connectivity for IoT, Research day, *Aalto University*, Finland
- 10/05/2018 Research directions for edge computing and LoRa, *National Chiao Tung University*, Hsinchu, Taiwan
- 25/04/2018 Adaptive configuration of LoRa networks for dense IoT deployments, Efficient placement of edge computing devices for vehicular applications in smart cities, conference paper presentations, *IEEE NOMS 2018*, Taipei, Taiwan
- 07/09/2016 Optimizing the placement of edge devices in vehicular networks, final internship presentation, *IBM Research*, Dublin, Ireland
- 29/06/2016 Opportunistic content offloading using white space and ISM spectrum, *IBM Research*, Dublin, Ireland
- 03/12/2015 Design and implementation of a distributed Mobility Management Entity on OpenStack, conference paper presentation, *IEEE CloudCom 2015*, Vancouver, Canada

## Awards and Honours

- Aug ‘19 Travel grant for [NeTS Early Career Workshop](#), National Science Foundation, VA, USA
- Spring ‘19 [Aalto Foundation travel grant](#) for research visit to Duke University
- Apr ‘18 Best student paper award, IEEE/IFIP NOMS 2018
- Apr ‘18 Student travel grant, IEEE/IFIP NOMS 2018, Apr 23-27, 2018, Taipei, Taiwan
- Nov ‘15 Student travel grant, IEEE CloudCom, Nov 30-Dec 3, 2015, Vancouver, Canada
- 2013 – 2015 Aalto University Category B Scholarship for Master’s study programme
- 2012, 2013 Two Cisco Achievement Program awards for excellent work
- 2010, 2011 Quarterly awards for “Excellence as a Business Operator” at Accenture
- 2006 – 2010 Scholarship for Bachelor’s study programme, Scholarship Programme for Diaspora Children (Ministry of Overseas Indian Affairs, Government of India)

---

## Teaching

### Teaching assistant

Fall '20	CS-E4190: Cloud Software and Systems
Fall '17, '18	CS-E4100: Mobile Cloud Computing
Spring '17	CS-E4002: The Internet of Things: Selected Themes
Fall '14, '15, '16	CS-E4005 Methods and Tools for Network Systems

### Master's thesis advisor

2018 – 2020	Advised six M.Sc. thesis students
-------------	-----------------------------------

---

## Academic service

### Program committee

**Computer Systems Engineering (CSE) track committee member** for Grace Hopper Conference for Women in Computing 2019

**Shadow PC member** for EuroSys 2018

### Reviewer

**Journals:** IEEE Transactions on Mobile Computing, IEEE Transactions on Communications, IEEE Transactions on Wireless Communications, IEEE Internet of Things Journal, Elsevier Pervasive and Mobile Computing, Springer Wireless Networks

**Conferences:** IEEE ICDCS 2021, IEEE WoWMoM (2019, 2020), IEEE Sarnoff 2019, IEEE SMARTCOMP 2017, IEEE PerCom (2016, 2021)

---

## Additional activities

2019, 2020	Website redesign co-chair, board member, <a href="#">N2Women</a>
Ongoing	Contributor and maintainer of open source simulator, <a href="#">Framework for LoRa (FLoRa)</a> for end-to-end simulations of LoRa networks
Ongoing	Active volunteer in <a href="#">codebar</a> , <a href="#">Women for Women Workshops</a> and <a href="#">Django Girls, Helsinki</a> with the goal to improve representation of underrepresented groups in technology