

Albert SUNNY
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Assistant Professor
Computer Science and Engineering
Indian Institute of Technology, Palakkad

I am a faculty in Computer Science and Engineering at IIT Palakkad. My research interests are in the areas of modelling, analysis and resource allocation in wireless and social networks.

EDUCATION

- **Indian Institute of Science (IISc), Bangalore, India** **2012 - 2016**
Department of Electronic Systems Engineering
Ph. D. in Engineering
Thesis Title: *Wireless and Social Networks: Some Challenges and Insights*
- **Indian Institute of Science (IISc), Bangalore, India** **2008 - 2011**
Department of Electronic Systems Engineering
Master of Science in Engineering
Thesis Title: *Distributed Wireless Networks: Link Scheduling and Application Delay Modelling*
Major : *Wireless Communication Networks*
- **National Institute of Technology, Calicut, India** **2003 - 2007**
Department of Electrical Engineering
Bachelor of Technology
Major: *Electrical and Electronics Engineering*

TEACHING EXPERIENCE

- Teaching assistant: *E2-243 (3:0) "Mathematics for Electrical Engineers"* offered at *Indian Institute of Science* during the semester of *January-April, 2015*.
- Teaching assistant: *E0-330 (3:1) "Convex Optimization and Applications"* offered at *Indian Institute of Science* during the semester of *January-April, 2016*.

RESEARCH EXPERIENCE (EXCLUDING Ph. D.)

- *Post-doctoral researcher* **Jul 2017 - Apr 2018**
NEO team, INRIA Sophia Antipolis, France
Work location: University of Avignon, France
Role: Using performance analysis and control tools to design scheduling algorithms for transmission of streaming video traffic over wireless channels. The performance objectives are to minimize or eliminate starvation while being fair in other performance measures such as throughput.
- *Research Assistant* **Feb 2012 - Aug 2012**
Indian Institute of Science, Bangalore, India
Role: Investigated the requirement of performance management in IEEE 802.11 Infrastructure WLANs. Proposed a coarse time-sliced approach to achieve fairness in WLANs. Proposed heuristics for link dependencies, and an on-line rate adaptation algorithm leveraging the closed loop of TCP.
- *Research Assistant* **Jun 2011 - Jan 2012**
Indian Institute of Science, Bangalore, India
Role: Investigated the requirement, and the problem of aggregate utility maximization in wireless mesh networks under a distributed greedy heuristic. Provided insights into the factors affecting aggregate utility maximization in a network, by providing bounds on the same. Quantified the sub-optimality of the greedy schedule by looking at the convergence properties of the ϵ -subgradient method.
- *M. Sc. (Engg.)* **Aug 2008 - Aug 2011**
Indian Institute of Science, Bangalore, India
Role: Studied the problem of joint congestion control, routing and MAC layer scheduling in multihop wireless network in the framework of cross-layer optimization. Explored the use of a known centralized greedy heuristic, and developed a distributed algorithm that can schedule independent links based on local information. Studied convergence issues related to the price update algorithm. Develop and simulated a practical protocol that maximizes aggregate utility in a wireless mesh network. Also studied delayed incurred by application packets sent over a WLAN.

INDUSTRY EXPERIENCE

- *Chief Technology Officer* **Mar 2017 - May 2018**
Wootz Technologies Pvt. Ltd., Bangalore, India
Role: Focusing on scientific and technical issues within the company. Essentially, responsible for leveraging the right technology, scientific knowledge and system architecture to create a market ready product.
- *Head of R&D* **Dec 2016 - Feb 2017**
Wootz Technologies Pvt. Ltd., Bangalore, India
Role: Built a Java based discrete event simulator to evaluate the performance of the proposed methods. Proposed and implemented a probabilistic demand forecast module. Proposed and implemented a carrier predication and segregation module. Proposed and built a website to demonstrate the efficacy of the above mentioned modules.

- *Consultant*

Apr 2016 - Dec 2016

Wootz Technologies Pvt. Ltd., Bangalore, India

Role: As a part of this startup, my role was to investigate, identify and propose methods to tackle on-demand vehicle routing problem. The proposed methods were also incorporated into a web portal using technologies such as *Java, Javascript, Node.js and MongoDB*.

ARTICLES IN PEER-REVIEWED JOURNALS

1. Tapas Kumar Patra and **Albert Sunny**, "Forwarding in Heterogeneous Mobile Opportunistic Networks," in *IEEE Communications Letters*, vol. 22, no. 3, pp. 626-629, March 2018 (Impact factor: 1.988).
2. Srinath Narasimha, Joy Kuri and **Albert Sunny**, "Reduced-Complexity Delay-Efficient Throughput-Optimal Scheduling with Heterogeneously Delayed Network-State Information," in *Elsevier Performance Evaluation*, vol. 121-122, pp. 18-37, March 2018 (Impact factor: 1.613).
3. Bhushan Kotnis, **Albert Sunny** and Joy Kuri, "Incentivized Campaigning in Social Networks," in *IEEE/ACM Transactions on Networking*, vol. 25, no. 3, pp. 1621-1634, June 2017 (Impact factor: 3.376).
4. **Albert Sunny**, Sumankumar Panchal, Nikhil Vidhani, Subhashini Krishnasamy, S.V.R. Anand, Malati Hegde, Joy Kuri and Anurag Kumar, "A Generic Controller for Managing TCP Transfers in IEEE 802.11 Infrastructure WLANs," in *Elsevier Journal of Network and Computer Applications*, vol. 93C, pp. 13-26, May 2017 (Impact factor: 3.500).
5. **Albert Sunny**, "Joint Scheduling and Sensing Allocation in Energy Harvesting Sensor Networks with Fusion Centers," in *IEEE Journal on Selected Areas in Communications*, vol. 34, no. 12, pp. 3577-3589, Dec 2016 (Impact factor: 8.085).
6. **Albert Sunny** and Joy Kuri, "A Framework for Designing Multihop Energy Harvesting Sensor Networks," in *IEEE Journal on Selected Areas in Communications*, vol. 34, no. 5, pp. 1491-1501, May 2016 (Impact factor: 8.085).
7. **Albert Sunny**, Siddhartha Sarma and Joy Kuri, "Secure Transmission in Cooperative Networks with Weak Eavesdroppers," in *IEEE Signal Processing Letters*, vol.22, no.10, pp.1693-1697, Oct. 2015 (Impact factor: 2.528).
8. **Albert Sunny**, Bhushan Kotnis and Joy Kuri, "Dynamics of History-dependent Epidemics in Temporal Networks," in *Physical Review E*, vol.92, no.2, pp.022811-022820, Aug. 2015 (Impact factor: 2.366).

ARTICLES IN PEER-REVIEWED CONFERENCES

1. Sudheer Poojary, Rachid El-Azouzi, Eitan Altman, **Albert Sunny**, Imen Triki, Majed Haddad, Tania Jimenez, Stefan Valentin and Dimitrios Tsilimantou, "Analysis of QoE for adaptive video streaming over wireless networks," in *16th International Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks (WiOpt)*, Shanghai, China, 2018, pp. 1-8.

2. **Albert Sunny**, Siddhartha Sarma and Joy Kuri, “Beating Resource Constrained Eavesdroppers: A Physical Layer Security Study,” in *IEEE 13th International Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks (WiOpt)*, vol., no., pp.167-174, 25-29 May 2015, Mumbai, India.
3. **Albert Sunny** and Joy Kuri, “Link Dependence Probabilities in IEEE 802.11 Infrastructure WLANs,” in *IEEE 13th International Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks (WiOpt)*, vol., no., pp.148-153, 25-29 May 2015, Mumbai, India.
4. **Albert Sunny**, Joy Kuri and Saurabh Aggarwal, “Application Delay Modelling for Variable Length Packets in Single Cell IEEE 802.11 WLANs,” in *IEEE National Conference on Communications (NCC)*, vol., no., pp.1-5, 28-30 Jan. 2011, Bangalore, India.
5. **Albert Sunny**, Joy Kuri and Saurabh Aggarwal, “Delay Modelling for a Single-hop Wireless Mesh Network under Light Aggregate Traffic,” in *IEEE International Conference on Communications and Signal Processing (ICCSP)*, vol., no., pp.271-275, 10-12 Feb. 2011, Calicut, India (Citation: 8).
6. **Albert Sunny** and Joy Kuri, “Distributed Greedy Scheduling for Multihop Wireless Networks,” in *IEEE 7th International Conference on Mobile Adhoc and Sensor Systems (MASS)*, vol., no., pp.582-587, 8-12 Nov. 2010, San Francisco, U. S. A. (Citation: 2).

HONORS/AWARDS

- Selected as a DST INSPIRE faculty fellow (Session II 2016).
- Selected for the SERB Indo-U.S. postdoctoral fellowship 2017.

SERVED AS REVIEWER FOR

- IEEE Communications Letters
- IEEE Journal on Selected Areas in Communications
- IEEE/ACM Transactions on Networking
- IEEE Transactions on Vehicular Technology
- IEEE Transactions on Information Forensics and Security
- Springer Wireless Personal Communications
- Sadhana - Springer

TECHNICAL SKILLS

- *Programming*: C, C++, Java, Javascript, Node.js
- *Applications*: Julia, Matlab, Mathematica, L^AT_EX, Microsoft Office, and other popular productivity packages for Windows and Linux platforms.

REFERENCES

Prof. Eitan Altman

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Indian Institute of Science, India
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Prof. Rachid El-Azouzi

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University of Avignon, France
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James Selvam

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Diamond District, Bengaluru
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