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 disciple 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

As faculty at Indian Institute of Technology Palakkad

- *CS5016: Computational Methods and Applications*; 2021, 2022.
- *CS5107: Programming Lab*; 2020, 2021.
- *CS4010: Computer Networks*; 2019, 2020, 2021.
- *CS4150: Computer Networks Lab*; 2019, 2020, 2021.
- *CS1020: Introduction to Programming*; 2020, 2021.
- *CS4602: Convex Optimization*; 2019.
- *CS2180: Artificial Intelligence Lab*; 2019.
- *CS4501: Game Theory*; 2018.
- *CS2130: Data Structures and Algorithms Lab*; 2018.

As teaching assistant at Indian Institute of Science

- *E0-330: Convex Optimization and Applications*; 2016.
- *E2-243: Mathematics for Electrical Engineers*; 2015.

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: Used performance analysis and control tools to design scheduling algorithms for transmission of streaming video traffic over wireless channels.
- *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.
- *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.
- *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.

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.*

SPONSORED PROJECTS

- *ZIGBEE-based Wireless Sensor Network for Landslide* **2020 - 2022**
  Agency: Indian Space Research Organisation (ISRO)
  Budget: ₹ 15.52 Lakhs
  Summary: Build a network of sensor nodes to monitor the various physical quantities of interest such as pore water pressure, rainfall and soil movement with the goal of monitoring land-slide prone areas and possibly predicting shallow landslides.

OTHER PROJECTS

Visit `https://albert-sunny.github.io/projects`

PATENTS

1. Dimitrios Tsilimantos, Rachid El-Azouzi, **Albert Sunny**, "Communication Entity and a Method for Transmitting a Video Data Stream," *US Patent Number 20220021920*, Jan. 2022.

ARTICLES IN PEER-REVIEWED JOURNALS

1. Swapnil Dhamal, Walid Ben-Ameur, Tijani Chahed, Eitan Altman, **Albert Sunny**, Sudheer Poojary, "Strategic Investments in Distributed Computing: A Stochastic Game Perspective," in *Elsevier Journal of Parallel and Distributed Computing*, vol. 169, pp., 317-333, Nov. 2022.
2. Reena Chackochan, **Albert Sunny** and Senthilkumar Dhanasekaran, "Approximate Aggregate Utility Maximization Using Greedy Maximal Scheduling," in *IEEE/ACM Transactions on Networking*, 2022.
3. **Albert Sunny**, Rachid El-Azouzi, Afaf Arfaoui, Eitan Altman, Sudheer Poojary, Dimitrios Tsilimantos, and Stefan Valentin, "Enforcing Bitrate-Stability for Adaptive Streaming Traffic in Cellular Networks," in *IEEE Transactions on Network and Service Management*, vol. 16, no. 4, pp. 1812-1825, Dec. 2019.
4. Reena Chackochan, Senthilkumar Dhanasekaran and **Albert Sunny**, "Asynchronous Distributed Greedy Link Scheduling in Multihop Wireless Networks," in *IEEE Transactions on Vehicular Technology*, vol. 67, no. 10, pp. 10166-10170, Oct. 2018.
5. 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.
6. 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.
7. 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.
8. **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.

9. **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.
10. **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.
11. **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.
12. **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.

ARTICLES IN PEER-REVIEWED CONFERENCES

1. M. Ashok Kumar, **Albert Sunny**, Ashish Thakre, Ashisha Kumar, and G. Dinesh Manohar, "A Unified Framework for Problems on Guessing, Source Coding, and Tasks Partitioning," in Proceedings of *IEEE International Symposium on Information Theory (ISIT)*, pp. 3339-3344, 2022.
2. Rachid El-Azouzi, **Albert Sunny**, Liang Zhao, Eitan Altman, Dimitrios Tsilimantos, Francesco De Pellegrini and Stefan Valentin, "Dynamic DASH Aware Scheduling in Cellular Networks," in Proceedings of *IEEE Wireless Communications and Networking Conference (WCNC)*, Marrakesh, Morocco, 2019, pp. 1-8.
3. Rachid El-Azouzi, Krishna V Acharya, Sudheer Poojary, **Albert Sunny**, Majed Haddad, Eitan Altman, Dimitrios Tsilimantos and Stefan Valentin, "Analysis of QoE for Adaptive Video Streaming over Wireless Networks with User Abandonment Behavior," in Proceedings of *IEEE Wireless Communications and Networking Conference (WCNC)*, Marrakesh, Morocco, 2019, pp. 1-8.
4. Sudheer Poojary, Rachid El-Azouzi, Eitan Altman, **Albert Sunny**, Imen Triki, Majed Haddad, Tania Jimenez, Stefan Valentin and Dimitrios Tsilimantos, "Analysis of QoE for adaptive video streaming over wireless networks," in Proceedings of *16th International Symposium on Modeling and Optimization in Mobile, Ad Hoc, and Wireless Networks (WiOpt)*, Shanghai, China, 2018, pp. 1-8.
5. **Albert Sunny**, Siddhartha Sarma and Joy Kuri, "Beating Resource Constrained Eavesdroppers: A Physical Layer Security Study," in Proceedings of *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.
6. **Albert Sunny** and Joy Kuri, "Link Dependence Probabilities in IEEE 802.11 Infrastructure WLANs," in Proceedings of *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.
7. **Albert Sunny**, Joy Kuri and Saurabh Aggarwal, "Application Delay Modelling for Variable Length Packets in Single Cell IEEE 802.11 WLANs," in Proceedings of *IEEE National Conference on Communications (NCC)*, vol., no., pp.1-5, 28-30 Jan. 2011, Bangalore, India.

8. **Albert Sunny**, Joy Kuri and Saurabh Aggarwal, "Delay Modelling for a Single-hop Wireless Mesh Network under Light Aggregate Traffic," in Proceedings of *IEEE International Conference on Communications and Signal Processing (ICCSP)* , vol., no., pp.271-275, 10-12 Feb. 2011, Calicut, India.
9. **Albert Sunny** and Joy Kuri, "Distributed Greedy Scheduling for Multihop Wireless Networks," in Proceedings of *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..

INVITED TALKS

1. "*DASH-aware Scheduling in Cellular Network*," IEEE International Conference on Signal Processing and Communications (SPCOM), Indian Institute of Science, Bangalore, 2022.
2. "*IoT Security Challenges*," FDP on "Secure Internet of Things," Indian Institute of Technology Palakkad, 2020.
3. "*IoT Network Security and Secure Protocols*," FDP on "Secure Internet of Things," Indian Institute of Technology Palakkad, 2020.
4. "*Recent Advances in Wireless Networks*," STTP on "Recent Trends in Wireless Sensor Networks and Applications," Malla Reddy Engineering College for Women, Hyderabad, 2020.
5. "*Physical Layer Security over Cooperative Networks*," workshop on "Physical Layer Security — Theory to Practice," Amrita Vishwa Vidyapeetham, Coimbatore, 2020.

HONORS/AWARDS

- Selected as DST INSPIRE faculty fellow (Session II 2016).
- Selected for 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
- IEEE Transactions on Network and Service Management
- Elsevier Journal of Network and Computer Applications
- Springer Wireless Personal Communications
- Springer Sadhana

TECHNICAL SKILLS

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