ADITYA K. MISHRA

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TEACHING INTERESTS
Computer Organization, Computing Systems, Operating Systems, Distributed Systems, Computer Networks, Mobile and Wireless Networks, Computer Architecture, Data Structures, Algorithms.

TEACHING SCORES
Average scores weighted by the number of respondents:
- **4.6/5** for all courses taught between fall-2019 to spring-2021.
- **4.43/5** for all courses taught between fall-2015 to spring-2021.

RESEARCH INTERESTS
Cyber-Physical Systems, Sustainability, Smart Grids, Energy storage, Optimization models, Distributed Systems and Networking.

EDUCATION

PhD in Computer Science (GPA: 4.0/4.0)
University of Massachusetts, Amherst, MA
Adviser: Prof. Prashant Shenoy

September 2015

Master of Technology in Information Technology (CPI: 9.71/10)
Indian Institute of Technology (IIT), Bombay, India

May 2007

Bachelor of Engineering in Information Technology (Percentage: 79.88%)
Shri Vaishnav Institute of Technology and Science (SVITS), Indore, India

June 2005

CURRENT EMPLOYMENT

Assistant Professor, Department of Computer Science
Seattle University

September 2015-present

HONORS AND AWARDS

- Summer Faculty Fellowship award 2021, "Does renewable and energy storage integration green the electric grid?"
- College of Science and Engineering undergraduate **summer research award 2019**, "SmartPeaks: Optimizing the electricity bill in smart homes with energy storage and solar."
- College of Science and Engineering undergraduate **summer research award 2018**, "Can renewables and energy storage to cut electricity bills produce a positive ROI?".
- College of Science and Engineering undergraduate **summer research award 2017**, "A Case for Employing Renewables to Cut the Electricity Bill in Seattle University."
- **Seattle University Center for Environmental Justice and Sustainability Fellowship 2016-2017** for "GreenPeaks: Employing renewables to cut load in electric grids".
- **Best paper award runner-up** ACM BuildSys 2014.

- **Best paper award finalist** ACM e-Energy 2013.
- Paper in **best papers session** at PerCom-2012.
- School of Computer Science **Outstanding Graduate Student Award** (2012).
- Passed the PhD qualifying exam at UMASS (Portfolio) with **distinction** in 2012 (distinction awarded to two students).
- Invited to Google GRAD CS Forum 2012.
- All India rank 28 in GATE (2004).
- Certificate of Merit for being among top 0.1 % in All India Secondary School Examination in science (1999).

COURSES TAUGHT AT SEATTLE UNIVERSITY

- CPSC 2500—Computer Organization (Fall 15, Winter 16, Winter 17, Fall 17, Winter 18, Fall 18, Winter 19, Fall 19, Fall 20, Winter 21)
- CPSC 4910/5910—Computer Architecture (Winter 16, Spring 18, Fall 19)
- CPSC 4100—Design and Analysis of Algorithms (Winter 19)
- CPSC 5041—Computer Systems Principles I (Winter 17, Winter 18)
- CPSC 5042—Computer Systems Principles II (Spring 16, Spring 18)
- CPSC 2430—Data Structures (Fall 16, Spring 17)
- CPSC 3500—Computing Systems (Spring 17, Spring 21)

MENTORING EXPERIENCE

- MSCS Projects:
  1. Employing renewables in smart buildings to cut grid load
     Mridula Shekhar (2015)
  2. GreenDraw: Applying renewables and energy storage to reduce demand peaks and cut cost at Seattle University
     Bailey Strom-Pillar (2017)
  3. Smart Mirror: Employing voice recognition to serve user-centric content in smart homes
     Lenny Bogdanov (2017)
  4. Does renewable and energy storage integration green the electric grid?
     Altanai Bisht (2021)
- Undergrad Summer Research Posters:
  1. "SmartPeaks: Optimizing the electricity bill in smart homes with energy storage and solar." Fall-2019. (Student: Megan Nguyen)
  2. "Can renewables and energy storage to cut electricity bills produce a positive ROI?" Fall-2018. (Student: Jared Mead)
  3. "A Case for Employing Renewables to Cut the Electricity Bill in Seattle University." Fall-2017. (Student: Hang Thi Thu Nguyen)
- Senior Design Projects at Seattle University
  1. 2015-16: SpecTRE (Specification Table Reconfiguration Editor)
     Sponsor: Astronics
  2. 2016-17: Astronics AES Specification Table Reconfiguration Editor (SpecTRE) 2.0
     Sponsor: Astronics
  3. 2017-18: Astronics COREPOWER® PLANNER
     Sponsor: Astronics

    4. 2020-21: Collaborative Calculus
       Sponsor: Mercer Island Telecom

PAST TEACHING EXPERIENCE

- **TA for CMPSCI 453: Computer Networks (Spring-15, UMass)**
- **Instructor for COMSC-322: Operating Systems (Fall-14, Mount Holyoke College)**
- **TA for CMPSCI 453: Computer Networks (Fall-14, UMass)**
- **TA for CMPSCI 105: Computer Literacy (Spring-11, UMass)**
- **TA for CMPSCI 187: Programming With Data Structures (Fall-10, UMass)**
- **TA for CS 653 Mobile Computing (Spring-07, IIT Bombay)**
- **TA for CS 680 Quality of Service in Networks (Fall-06, IIT Bombay)**
- **TA for APCPP Advanced Programming in C++ (Spring-06, IIT Bombay)**
- **TA for MG 647 Entrepreneurship (Fall-05, IIT Bombay)**

RESEARCH EXPERIENCE

Seattle University, Seattle *Assistant Professor* (Fall 2015-present)
I am currently an assistant professor in Computer Science at Seattle University. My job responsibilities include teaching courses, advising MS and BS students, conducting research, writing research papers, and academic service activities. My recent research focuses on devising cyber-physical systems and energy optimizations for sustainability in smart grids, smart homes. Besides, I have worked in the area of computer systems and networks.

University of Massachusetts, Amherst, *Research Assistant* with Prof. Prashant Shenoy (Fall 2010-Summer 2015)
I adopted a systematic approach to understand how to optimize energy consumption profiles of smart buildings, so as to make them sustainable, grid-friendly, and reduce their electricity bills. I deployed sensors at buildings and collected real-world data. In my work, I drew from several fields of applied computer science and mathematics, such as analytical modeling, optimization, machine learning, and big data. I also built research prototypes for the proposed solutions.

IBM Research, Zurich, *Intern* with Dr. Dieter Gantenbein (Summer 2012)
To enable EV (Electric Vehicle) smart charging, I Designed a communication protocol between an EVFO (Electric Vehicle Fleet Operator) and an electricity retailer. By EV smart charging the proposed interface further facilitates electric grid regulation on top of existing information and communication channels. Further, in the context of EcoGrid, I enhanced the existing price distribution protocol and proposed an architecture for distributing real time electricity prices in smart grids.

University of Massachusetts, Amherst, *Research Assistant* with Prof. Arun Venkataramani (Fall 2009-Summer-2010)
Studied the impact of various traffic engineering (TE) schemes on user-perceived application performance. We found that link utilization metrics are poor predictors of application performance. Despite significant differences in MLU, all TE schemes and even a static shortest-path routing scheme achieve nearly identical application performance.

Indian Institute of Technology, Bombay, *Master's Student*, with Prof. A. Sahoo (Fall 2005-Spring 2007)

Worked on Quality of Service protocols, and traffic engineering algorithms for networks. I proposed two novel traffic engineering algorithms for OSPF based best-effort networks.

INDUSTRY EXPERIENCE

Oracle India Pvt. Ltd., *Member Technical Staff*, August 2007-July-2009
As a member of Advanced Technology Team, my job had two components, product related research and development. I contributed in platform API development for OCS (Oracle Collaboration Suite), designed and developed the RSS based syndication service in OCS.

JOURNAL PUBLICATIONS

1. David Irwin, Srinivasan Iyengar, Stephen Lee, **Aditya Mishra**, Prashant Shenoy, and Ye Xu. "Enabling Distributed Energy Storage by Incentivizing Small Load Shifts," *ACM Transactions on Cyber-Physical Systems*, 2017.

2. Zhichuan Huang, Ting Zhu, David Irwin, **Aditya Mishra**, Daniel Menasche, and Prashant Shenoy. "Minimizing Transmission Loss in Smart Microgrids by Sharing Renewable Energy," *ACM Transactions on Cyber-Physical Systems*, 2016.

3. **Aditya K. Mishra**, David E. Irwin, Prashant J. Shenoy, Jim Kurose and Ting Zhu.. "GreenCharge: Managing Renewable Energy in Smart Buildings," *IEEE Journal on Selected Areas in Communications* (JSAC), Special Series on Smart Grid Communications, 31(7):1281-1293, July 2013.

CONFERENCE & WORKSHOP PUBLICATIONS

4. Altanai Bisht and **Aditya Mishra**. "Does energy storage for peak shaving green the grid?" (*In submission*).

5. Bhavana Dalvi Mishra, **Aditya Mishra** and William W. Cohen. "Multi-View Hierarchical Semi-supervised Learning by Optimal Assignment of Sets of Labels to Instances." (*To be submitted soon*).

6. Yasra Chandio, **Aditya Mishra** and Anand Seetharam. "GridPeaks: Employing Distributed Energy Storage for Grid Peak Reduction," IEEE IGSC 2019.

7. Raphael Luciano de Pontes, **Aditya Mishra**, Anand Seetharam, Mridula Shekhar and Arti Ramesh. "GreenPeaks: Employing renewables to effectively cut load in electric grids," IEEE SMARTCOMP 2018.

8. Gissella Bejarano, Mayank Jain, Arti Ramesh, Anand Seetharam and **Aditya Mishra**. "Predictive Analytics for Smart Water Management in Developing Regions," IEEE SMARTCOMP Smart Industries Workshop 2018.

9. **Aditya Mishra**, Anirudha Sahoo, Bhavana Dalvi and Ting Zhu. "WOSPF: A Traffic Engineering Solution for OSPF Networks," IEEE GLOBECOM, December 2016.

10. Bhavana Dalvi Mishra, **Aditya Mishra** and William W. Cohen. "Hierarchical Semi-supervised Classification with Incomplete Class Hierarchies," *Proceedings of the 9th ACM International Conference on Web Search and Data Mining* (WSDM 2016), February 2016.

11. **Aditya Mishra**, Ramesh Sitaraman, David Irwin, Ting Zhu, Prashant Shenoy, Bhavana Dalvi Mishra, and Stephen Lee. "Integrating Energy Storage in Electricity Distribution Networks," *Proceedings of the 6th ACM Intl. Conference on Future Energy Systems* (ACM e-Energy), July 2015.

12. Zhichuan Huang, Jikui Su, Ting Zhu, Ankur Sharma, Ameya Ambegaonkar, Yu Gu, David Irwin, **Aditya Mishra**, and Prashant Shenoy. "Minimizing Electricity Costs by Sharing Energy in Sustainable Microgrids," *Proceedings of the 1st ACM International Conference on Embedded Systems for Energy-Efficient Buildings* (BuildSys), 2014. **Best paper award runner-up**.

13. **Aditya Mishra**, David Irwin, Prashant Shenoy and Ting Zhu. "Scaling distributed energy storage for grid peak reduction," *Fourth ACM international Conference on Future Energy Systems* (ACM e-Energy), May 2013. **Best paper award finalist**.

14. Ting Zhu, Zhichuan Huang, Ankur Sharma, Jikui Su, David Irwin, **Aditya Mishra**, Daniel Menasche and Prashant Shenoy. "Sharing Renewable Energy in Smart Microgrids," *ACM/IEEE 4th International Conference on Cyber-Physical Systems* (ACM/IEEE ICCPS), April 2013.

15. Dieter Gantenbein, Carl Binding, Bernhard Jansen, **Aditya Mishra** and Olle Sundstrom. "EcoGrid EU: An efficient ICT approach for a sustainable power system," *Sustainable Internet and ICT for Sustainability* (IEEE SustainIT), October 2012.

16. Sean Barker, **Aditya Mishra**, David Irwin, Emmanuel Cecchet, Prashant Shenoy and Jeannie Albrecht. "Smart*: An Open Data Set and Tools for Enabling Research in Sustainable Homes," *Workshop on Data Mining Applications in Sustainability* (SustKDD), August 2012.

17. **Aditya Mishra**, David Irwin, Prashant Shenoy, Jim Kurose and Ting Zhu. "SmartCharge: cutting the electricity bill in smart homes with energy storage," *Third International Conference on Future Energy Systems* (ACM e-Energy), May 2012.

18. Sean Barker, **Aditya Mishra**, David Irwin, Prashant Shenoy and Jeannie Albrecht. "SmartCap: Flattening peak electricity demand in smart homes," *The tenth IEEE International Conference on Pervasive Computing and Communications* (PerCom), March 2012. Paper in **best papers session**.

19. Ting Zhu, **Aditya Mishra**, David Irwin, Navin Sharma, Prashant Shenoy and Don Towsley. "The Case for Efficient Renewable Energy Management for Smart Homes," *Third Workshop on Embedded Sensing Systems for Energy-efficiency in Buildings* (BuildSys), November 2011.

20. David Irwin, Anthony Wu, Sean Barker, **Aditya Mishra**, Prashant Shenoy and Jeannie Albrecht. "Exploiting Home Automation Protocols for Load Monitoring in Smart Buildings," *Third Workshop on Embedded Sensing Systems for Energy-efficiency in Buildings* (BuildSys), November 2011.

21. Abhigyan Sharma, **Aditya Mishra**, Vikas Kumar and Arun Venkataramani. "Beyond MLU: An application-centric comparison of traffic engineering schemes," *IEEE INFOCOM*, April 2010.

22. **Aditya K. Mishra** and Anirudha Sahoo. "S-OSPF: a traffic engineering solution for OSPF based best effort networks," *IEEE GLOBECOM*, November 2007.

OTHER PUBLICATIONS

23. Bernhard Jansen, Carl Binding, **Aditya Mishra**. "Input on the Real-Time Price distribution protocol for Ecogrid EU WP 3 Task 3.6," `http://www.zurich.ibm.com/pdf/ecogrid/price_distribution_protocol_1.2.pdf`, September 2012.

24. **Aditya Mishra**, Dieter Gantenbein, Bernhard Jansen. "IBM FERN Smart Charging Interface between EV FO and Retailer," `http://www.zurich.ibm.com/pdf/ecogrid/b2bprotocol_ver1.1.pdf`, July 2012.

PROGRAMMING LANGUAGES AND TOOLS Python, Java, C, C++, Weka, SQL, PyTorch, Scikit-learn.

INVITED TALKS

1. "Does renewable and energy storage integration green the electric grid" to be presented at Faculty Research Lightening Talks in October-2021.

2. "WOSPF: A Traffic Engineering Solution for OSPF Networks" in GLOBECOM-2016 at Washington DC in December-2016.

3. "GreenPeaks: Employing renewables to cut peak loads in buildings and grids" in CEJS fall brown bag lunch-2016, Seattle University.

4. Research presentations in CS students club in 2016, 2017 at Seattle University.

5. "Demand-side Energy Management and Peak Load Shaving for Smart Homes", *IBM T.J. Watson Research Center*, November 2011.

6. "Exploiting Energy Storage in Smart Buildings", *Holyoke Gas and Electric*, October 2012.

EXTERNAL PROFESSIONAL SERVICE

1. Reviewer for Springer Nature in 2020.

2. Technical program committee member for ICCCN 2019.

3. Reviewer for Energies Journal in 2018.

4. Technical program committee member for ACM eEnergy 2017.

5. Reviewer for Sustainability Journal in 2016.

6. Reviewer for Energies Journal in 2016.

DEPARTMENT-LEVEL SERVICE

1. Computer Science department curriculum subcommittee (systems): winter-18

2. Member of Computer Science department curriculum committee: Fall-17 – present

3. Instructor searches: 2016, 2017

4. Tenure track search 2016-17

5. Student Advisor: Fall-2016 – present

6. Presented my research work in CS students club in 2016, 2017

7. Faculty advisor for student industry internships: Fall-19, summer-21 (two students)

8. Student members' selection for Student Advisory Council

COLLEGE-LEVEL SERVICE

1. Member of College of Science and Engineering Technology Committee: Fall-19 – present

2. Member of College Curriculum Committee since fall-2020 – present

COMMUNITY SERVICE

1. Kit building for Dignity for Divas