Curriculum vitæ

Address

Noman Bashir
University of Massachusetts Amherst
206 Knowles Engineering Building
Amherst, MA, 01002
E-mail: nbashir@umass.edu
Homepage: https://noman-bashir.github.io/

Areas of Specialization

Designing sustainable, equitable, and explainable computing systems, e.g., edge, cloud, datacenters, and cyber-physical systems, e.g., electric grid.

Education

08/2016–02/2022	PhD in Computer Engineering, University of Massachusetts Amherst
09/2013–03/2016	MS Energy Systems Engineering, National University of Science and Technology, Islamabad, Pakistan
09/2009–05/2013	BS Electrical Engineering, University of Engineering and Technology, Lahore, Pakistan

Employment

09/2016–present	PhD student and graduate research assistant, Sustainable Computing Lab, University of Massachusetts Amherst, advised by David Irwin.
05/2021–08/2021	Student researcher at VMware Research Group. Hosted by Ben Pfaff and Victor Firoiu.
05/2020–11/2020	Student researcher at the SysInfra/Borg team inside Google. Hosted by Nan Deng and Krzysztof Rzadca.
05/2015–06/2016	Research associate, Advanced Communication Lab, Lahore University of Management Sciences (LUMS), advised by Naveed-ul-Hassan.
09/2013–05/2015	Research engineer, Systems and Networks (SysNet) Lab, National University of Computer and Emerging Sciences, Pakistan, advised by Affan A. Syed.

Publications

Conference Papers

[1] Noman Bashir, Tian Guo, Mohammad Hajiesmaili, David Irwin, Prashant Shenoy, Ramesh Sitaraman, Abel Souza, Adam Wierman. *Enabling Sustainable Clouds: The Case for Virtualizing the Energy System*, ACM Symposium on Cloud Computing (SoCC), 2021.

[2] Pradeep Ambati, Noman Bashir, David Irwin, Prashant Shenoy. *Good Things Come to Those Who Wait: Optimizing Job Waiting in the Cloud*, ACM Symposium on Cloud Computing (SoCC), 2021.

[3] Noman Bashir, Nan Deng, Krzysztof Rzadca, David Irwin, Sree Kodak, Rohit Jnagal. *Take it to the Limit: Prediction-Driven Resource Overcommitment in Datacenters*, European Conference on Computer Systems (EuroSys), 2021, Artifact Badges: Available, Functional, and Results Reproduced.

[4] Noman Bashir, David Irwin, Prashant Shenoy. *DeepSnow: Modeling the Impact of Snow on Solar Generation*, ACM International Conference on Systems for Energy-Efficient Buildings, Cities, and Transportation (BuildSys), 2020.

[5] Noman Bashir, David Irwin, Prashant Shenoy. *A Probabilistic Approach to Committing Solar Energy in Day-ahead Electricity Markets*, International Green and Sustainable Computing Conference (IGSC), 2020.

[6] Pradeep Ambati, Noman Bashir, David Irwin, Prashant Shenoy. *Waiting Game: Optimally Provisioning Fixed Resources for Cloud-enabled Schedulers*, Supercomputing (SC) 2020, Best Paper Award Finalist and Best Student Paper Award Finalist.

[7] Santiago Correa, Noman Bashir, Andrew Tran, David Irwin, Jay Taneja. *Extend: A Framework for Increasing Energy Access by Interconnecting Solar Home Systems*, ACM SIGCAS Conference on Computing and Sustainable Societies (COMPASS), 2020.

[8] Menghong Feng, Noman Bashir, Prashant Shenoy, David Irwin, Dragoljub Kosanovic. *SunDown: Model-driven Per-Panel Solar Anomaly Detection for Residential Arrays*, ACM SIGCAS Conference on Computing and Sustainable Societies (COMPASS), 2020.

[9] Pradeep Ambati, Noman Bashir, Mohammad Hajiesmaili, David Irwin, Prashant Shenoy. *Hedge Your Bets: Optimizing Long-term Cloud Costs by Mixing VM Purchasing Options*, IEEE International Conference on Cloud Engineering (IC2E), 2020.

[10] Noman Bashir, Dong Chen, David Irwin, Prashant Shenoy. *Solar-TK: A Data-driven Toolkit for Solar PV Performance Modeling and Forecasting*, IEEE International Conference on Mobile Ad-Hoc and Smart Systems (MASS), 2019.

[11] Santiago Correa, Noman Bashir, Jesus Omana Iglesias, Candace Saffery, Jay Taneja. *Like a Good Neighbor, Solar is There*, The International Conference on Future Energy Systems (e-Energy), 2019.

[12] Noman Bashir, David Irwin, Prashant Shenoy. *Helios: A Programmable Software-defined Solar Module*, ACM International Conference on Systems for Energy-Efficient Buildings, Cities, and Transportation (BuildSys), 2018.

[13] Noman Bashir, David Irwin, Prashant Shenoy, Jay Taneja. *Enforcing Fair Grid Energy Access for Controllable Distributed Solar Capacity*, ACM International Conference on Systems for Energy-Efficient Buildings, Cities, and Transportation (BuildSys), 2017.

[14] Noman Bashir, Hira Shahzad Sardar, Mashood Nasir, Naveed Ul Hassan, Hassan A. Khan. *Lifetime Maximization of Lead-acid Batteries in Small Scale UPS and Distributed Generation Systems*, IEEE PowerTech, 2017.

[15] Aneeq Ur Rehman, Noman Bashir, Naveed Ul Hassan, Chau Yuen. *Impact of Home Appliances on the Performance of Narrow-band Power Line Communications for Smart Grid Applications*, IEEE Region Ten International Conference (TenCon), 2016.

[16] Noman Bashir, Zohaib Sharani, Khushboo Qayyum, and Affan A. Syed. *Delivering Smart Load-shedding for Highly-stressed Grids*, IEEE International Conference on Communications, Control, and Computing Technologies for Smart Grids (SmartGridComm), 2015.

Journal Articles

[17] Pradeep Ambati, Noman Bashir, David Irwin, Prashant Shenoy. *Modeling and Analyzing Waiting Policies for Cloud-Enabled Schedulers*, IEEE Transactions on Parallel and Distributed Systems (TPDS), 2021.

[18] Menghong Feng, Noman Bashir, Prashant Shenoy, David Irwin, Dragoljub Kosanovic. *Model-driven Per-Panel Solar Anomaly Detection for Residential Arrays*, ACM Transactions on Cyber-Physical Systems (TCPS), 2021.

[19] Noman Bashir, David Irwin, Prashant Shenoy, Jay Taneja. *Mechanisms and Policies for Controlling Distributed Solar Capacity*, The ACM Transactions on Sensor Networks (TOSN), 2018.

Book Chapters

[20] Noman Bashir, Naveed Ul Hassan, Chau Yuen, Wayes Tushar. *Smart-grid Communications and Standard*, in *IET Communication, Control and Security Challenges for the Smart Grid*, 2017.

Posters/Demos (Peer-reviewed)

[21] Santiago Correa, Noman Bashir, Jesus Omana Iglesias, Candace Saffery, Jay Taneja. *EXTEND: A Framework for Increasing Energy Access in Communities with Solar Home Systems*, ACM SIGCAS Conference on Computing and Sustainable Societies (COMPASS), 2019.

[22] Noman Bashir, Dong Chen, David Irwin, Prashant Shenoy. *Solar-TK: Solar Performance Modeling and Forecasting Toolkit*, ACM International Conference on Systems for Energy-Efficient Buildings, Cities, and Transportation (BuildSys), 2019.

[23] Zohaib Sharani, Noman Bashir, Khushboo Qayyum, and Affan A. Syed. *Enabling Practical Demand Response in Highly-Stressed Grids using Aashiyana*, The International Conference on Future Energy Systems (e-Energy), 2015.

[24] Zohaib Sharani, Khushboo Qayyum, Noman Bashir, and Affan A. Syed. *SoftUPS: Eliminating the Need and Cost of Battery Backups*, The International Conference on Future Energy Systems (e-Energy), 2014.

Thesis

[25] Noman Bashir. *Improving the Programmability of Networked Energy Systems*, PhD thesis, University of Massachusetts Amherst, 2022.

[26] Noman Bashir. *Using Stressed Grids as a Storage Medium for Renewable Energy*, MSc thesis, National University of Science and Technology (NUST), Islamabad, 2016.

Submitted Papers

[27] Abel Souza, Noman Bashir, Jorge Murillo, Walid Hanafy, Qianlin Liang, David Irwin, Prashant Shenoy. *Ecovisor: A Virtual Energy System for Carbon-Efficient Applications.*

Academic Honors

2020	Best student paper and best paper finalist at ACM/IEEE Supercomputing (SC).
2017	Best paper nomination at ACM BuildSys.

Invited Talks

04/2021	Information Technology University (ITU), Pakistan, (virtual), *Leveraging Machine Learning to Design Energy Efficient and Sustainable Systems.*
11/2020	Energy Data Analytics Symposium, Duke University, *Solar-TK: A Data-driven Toolkit for Solar PV Performance Modeling and Forecasting.*

Service to the Profession

Shadow PC member for ACM EuroSys 2022.

Reviewer for IEEE Transactions on Parallel and Distributed Systems (TPDS) and Elsevier Sustainable Computing (SUSCOM) journal.

References

Furnished upon request.

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