

# Stephen Lee

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## RESEARCH INTERESTS

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- Distributed systems, Cyber-physical systems and IoT, Big-data analytics and data-driven systems, IoT Security and privacy, Smart cities and energy.

## EDUCATION

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- **University of Massachusetts Amherst** Sept 2013 - Jul 2019  
Ph.D. Computer Science *Advisor: Prof. Prashant Shenoy*  
– Thesis: Software-defined Infrastructure for IoT-based Energy Systems.
- **Chennai Mathematical Institute, Chennai** Aug 2008 - Apr 2011  
M.S. Computer Science *Advisor: Prof. Madhavan Mukund*
- **St. Stephen's College, Delhi** July 2004 - June 2007  
B.S Computer Science

## ACADEMIC APPOINTMENTS

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- **Assistant Professor** University of Pittsburgh, Pittsburgh  
Department of Computer Science *August 2019 -*
- **Research Assistant** University of Massachusetts Amherst  
Advisor: Prof. Prashant Shenoy *Sep 2013 - Jul 2019*
- **Research Scholar** University of Waterloo, Canada  
Advisor: Prof. Srinivasan Keshav *Jul - Aug 2018*

## INDUSTRY EXPERIENCE

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- **Veeva** June - Aug 2017  
Summer Intern. Mentor: Sambit Sahu *NYC, NY*
- **Tata Research Development and Design Center** May 2011 - Aug. 2013  
Research Associate *Pune, India*
- **Ignite, Tata Consultancy Services** Nov 2007 — Apr 2011  
Software Engineer, R&D Team *Chennai, India*

## JOURNALS

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- 1 Prateek Sharma, **Stephen Lee**, Tian Guo, David Irwin, and Prashant Shenoy. Managing Risk in a Derivative IaaS Cloud. In *Proceedings of IEEE Transactions on Parallel and Distributed Systems*, (TPDS '18).
- 2 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*, (ACM TCPS '17).

- 14 Phuthipong Bovornkeeratiroj, Srinivasan Iyengar, **Stephen Lee**, David Irwin, Prashant Shenoy. RepEL: A Utility-preserving Privacy System for IoT-based Energy Meters. In *Proceedings of the ACM/IEEE Conference on Internet of Things Design and Implementation (IoTDi)*, Sydney, Australia, 2020.
- 13 **Stephen Lee**, Srinivasan Iyengar, Menghong Feng, Prashant Shenoy and Subhransu Maji. DeepRoof: A Data-driven Approach For Solar Potential Estimation Using Rooftop Imagery. In *Proceedings of the 25th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining, (KDD '19)*. Anchorage, AK, 2019. (oral presentation).
- 12 Christian Gorenflo, **Stephen Lee**, Lukasz Golab, and Srinivasan Keshav. FastFabric: Scaling Hyperledger Fabric to 20,000 Transactions per Second. In *IEEE International Conference on Blockchain and Cryptocurrency (ICBC 2019)*, Seoul, South Korea, May 2019.
- 11 Srinivasan Iyengar, **Stephen Lee**, David Irwin, Prashant Shenoy, and Benjamin Weil. WattHome: A Data-driven Approach for Energy Efficiency Analytics at City-scale. In *Proceedings of the 24th ACM SIGKDD International Conference on Knowledge Discovery and Data Mining, (KDD '18)*. (oral presentation). Acceptance rate=11%
- 10 Srinivasan Iyengar, **Stephen Lee**, Daniel Sheldon, and Prashant Shenoy. SolarClique: Detecting Anomalies in Residential Solar Arrays. In *Proceedings of the 1st ACM SIGCAS Conference on Computing and Sustainable Societies, (ACM COMPASS '18)*. Acceptance rate = 34%
- 9 John Wamburu, **Stephen Lee**, Prashant Shenoy, and David Irwin. Analyzing Distribution Transformers at City Scale and the Impact of EVs and Storage. In *Proceedings of the Ninth International Conference on Future Energy Systems, (ACM e-Energy '18)*. Acceptance rate = 21%
- 8 **Stephen Lee**, Srinivasan Iyengar, David Irwin, and Prashant Shenoy. Distributed Rate Control for Smart Solar Arrays. In *Proceedings of the Eighth International Conference on Future Energy Systems, (ACM e-Energy '17)*. Acceptance rate = 33%
- 7 Akansha Singh, **Stephen Lee**, David Irwin, and Prashant Shenoy. SunShade: Enabling Software-Defined Solar-Powered Systems. In *Proceedings of the 8th ACM/IEEE International Conference on Cyber-Physical Systems, (ICCPs '17)*.
- 6 Srinivasan Iyengar, **Stephen Lee**, David Irwin, and Prashant Shenoy. Analyzing Energy Usage on a City-scale Using Utility Smart Meters. In *Proceedings of the 3rd ACM International Conference on Systems for Energy-Efficient Built Environments, (ACM BuildSys '16)*. Acceptance rate =24%
- 5 **Stephen Lee**, Srinivasan Iyengar, David Irwin, and Prashant Shenoy. Shared solar-powered EV charging stations: Feasibility and benefits. In *Proceedings of the Seventh International Green and Sustainable Computing Conference, (IGSC '16)*.
- 4 Vani Gupta, **Stephen Lee**, Prashant Shenoy, Ramesh K. Sitaraman, and Rahul Urgaonkar. How to Cool Internet-scale Distributed Networks on the Cheap. In *Proceedings of the Seventh International Conference on Future Energy Systems, (ACM e-Energy '16)*. Acceptance rate = 30%
- 3 **Stephen Lee**, Rahul Urgaonkar, Ramesh Sitaraman, and Prashant Shenoy. Cost Minimization Using Renewable Cooling and Thermal Energy Storage in CDNs. In *Proceedings of IEEE International Conference on Autonomic Computing, (ICAC '15)*. Acceptance rate = 27%
- 2 Aditya Mishra, Ramesh Sitaraman, David Irwin, Ting Zhu, Prashant Shenoy, Bhavana Dalvi, and **Stephen Lee**. Integrating Energy Storage in Electricity Distribution Networks. In *Proceedings of the 2015 ACM Sixth International Conference on Future Energy Systems, (ACM e-Energy '15)*. Acceptance rate = 24%

- 1 Prateek Sharma, **Stephen Lee**, Tian Guo, David Irwin, and Prashant Shenoy. SpotCheck: Designing a Derivative IaaS Cloud on the Spot Market. In *Proceedings of the Tenth European Conference on Computer Systems*, (EuroSys '15). Acceptance rate = 21%

#### NOTES AND POSTER PUBLICATIONS

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- 3 **Stephen Lee**, Prashant Shenoy, Krithi Ramamritham, and David Irwin. vSolar: Virtualizing Community Solar and Storage for Energy Sharing. In *Proceedings of the Ninth International Conference on Future Energy Systems*, (ACM e-Energy '18).
- 2 Akansha Singh, **Stephen Lee**, David Irwin and Prashant Shenoy. SunShade: Software-defined Solar Systems. In *Proceedings of the Seventh International Conference on Future Energy Systems Poster Sessions*, (ACM e-Energy '16).
- 1 Vani Gupta, **Stephen Lee**, Prashant Shenoy, Ramesh Sitaraman, and Rahul Urgaonkar. Towards Cooling Internet-Scale Distributed Networks on the Cheap. In *Proceedings of the 2015 ACM SIGMETRICS International Conference on Measurement and Modeling of Computer Systems*, (SIGMETRICS '15). (Extended Abstract)

#### PATENTS

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- 1 Shruti Bhattacharya, Swaminathan Natarajan, **Stephen Lee**, Arpit Mandliya, Suman Singh, Kunal Ramdasi. Evaluating Total Cost Of Ownership Based On System Design. Patent No: 1445/MUM/2013
- 2 **Stephen Lee**, Mariyam L., Makarand K., Anjali G., Rahul Kelkar, Harrick Vin. Analytical method for target state determination of datacenter having heterogeneous sub-systems. Patent No: 3521/MUM/2012
- 3 Raman Srinivasan, Priyadarshini. Sridhar, Usha Rani, Swarna Srinivasan, **Stephen Lee**, Prema Subramaniam. Personalized Content Generation. Patent Number: 574/MUM/2011

#### TEACHING EXPERIENCE

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- **Courses Taught at University of Pittsburgh**

- CS3720: Advanced Topics on Internet of Things. Fall 2019
- CS1550: Introduction to Operating Systems Spring 2020

- **Teaching Assistant at University of Massachusetts Amherst**

- CS220: Programming Methodology. Fall 2014
- CS187: Programming with Data Structures. Spring 2013
- CS120: Problem Solving with the Internet. Fall 2013

- **Workshop Assistant, Arduino LED Workshop**

- Organized and helped undergrads debug technical issues during the session. Oct 2015, 2016, 2017  
UMass Amherst

- **Tutor: Java and Web Programming**

- Taught J2EE, CSS/HTML and Javascript for 3 cohorts of trainees. Class size of 24. Apr 2008 - Apr 2011  
TCS

- Guest lecture:

- “Debugging tools for Web Development”, Problem Solving with the Internet. Fall 2013.

#### SERVICE

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- **Program Committee**

- 5th International Workshop on Science of Smart City Operations and Platforms Engineering (SCOPE), Sydney, Australia, 2020. (co-located with CPS-IoT Week 2020).

- The Twelfth Annual Energy Conversion Congress and Exposition (ECCE), Detroit, Michigan, USA. 2020. (Topic Chair)
- ACM International Conference on Future Energy Systems (ACM e-Energy), Sydney, Australia, 2020.
- ACM/IEEE Conference on Internet of Things Design and Implementation (IoTDi), Sydney, Australia, 2020.
- Association for the Advancement of Artificial Intelligence (AAAI), AI for Social Impact Track, 2020.
- The Fourth International Conference on Green Communications, Computing and Technologies, Nice, France, 2019.
- The Ninth International Conference on Smart Grids, Green Communications and IT Energy-aware Technologies, Athens, Greece, 2019.
- The Fourth International Conference on Green Communications, Computing and Technologies, Venice, Italy, 2018.

- **Organization Committee**

- ACM/IEEE Conference on Internet of Things Design and Implementation (IoTDi), Sydney, Australia, 2020.
- Program and Demo Chair. ACM International Conference on Future Energy Systems (ACM e-Energy), Sydney, Australia, 2020.

- **Journal Reviewer:**

- ACM Multimedia Systems Conference (MMSys).
- ACM Transactions on Internet of Things (TIoT) .
- IEEE Transactions on Parallel and Distributed Systems (TPDS) .
- Applied Soft Computing.
- IEEE Transactions on Mobile Computing (TMC) .
- Elsevier Energy Reports Journal

- **Conference and Workshop Reviewer**

- IEEE International Conference on Computer Communications (INFOCOM) 2020.

## HONORS AND AWARDS

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- **UMass College of Information and Computer Sciences Outstanding Dissertation Award**, 2020.
- **PhD Portfolio with Distinction**, 2015. (Awarded to two PhD students per year).
- **First Prize**, Third annual HackUMass Hackathon 2015 (> 500 participants).
- **Tata Consultancy Services Scholarship** for Masters education at Chennai Mathematical Institute (CMI).
- Member, Phi Kappa Phi. 2016.
- Awarded *On the Spot Award* in Tata Consultancy Services (TCS) for maintaining high availability of TCS Online Assessment Solution, a tool used for hiring thousands of employees every year.
- Semi-finalist under Promising Innovation category in Tata Innovista, a Tata Forum to showcase innovation efforts. Led an initiative for building the TCS Assessment Platform.
- Travel grant recipient: SIGMETRICS 2015, ACM eEnergy 2015, CompSust 2016, ACM eEnergy 2016, ACM eEnergy 2018.

## GRANTS

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- Amy Babay, Jacob Biehl, Adriana Kovashka, Olga Kuchinskaya, Adam J. Lee, **Stephen Lee**, Eleanor “Nora” Mattern. *Sensing Infrastructure*. Pitt Cyber Accelerator Grants. Award: \$15,000. March, 2019.

## REFERENCES

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Available on request.