

# Nipun Batra

POSTDOC. RESEARCHER

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## Education

### Indraprastha Institute of Information Technology Delhi

PH.D. CANDIDATE, COMPUTER SCIENCE (GPA 9.3/10)

*Delhi, India*

*Jan 2012-Present*

### Delhi College of Engineering

BACHELORS OF ENGINEERING (HONS.), COMPUTER SCIENCE (GPA 9/10)

*Delhi, India*

*Jul 2007 -April 2011*

## Honours & Awards

2017	<b>AAAI travel grant</b> , AAAI 2017	<i>San Francisco, USA</i>
2016	<b>Best video nominee</b> , KDD 2016, Acceptance rate: 3.1%	<i>San Francisco, USA</i>
2016	<b>Finalist in UChicago Delhi urban challenge</b> , Acceptance rate: 3.6%	<i>Delhi, India</i>
2016	<b>3rd position in IoT hackathon</b> , Microsoft Research Summer School	<i>Bangalore, India</i>
2016	<b>Google, Microsoft Research and KDD travel grant</b> , KDD 2016	<i>San Francisco, USA</i>
2015	<b>Best presentation award</b> , Sensys 2015 Doctoral Colloquium	<i>Seoul, South Korea</i>
2015	<b>ACM travel grant</b> , Sensys 2015	<i>Seoul, South Korea</i>
2014	<b>Best demo award</b> , Buildsys 2014	<i>Memphis, USA</i>
2014	<b>ACM travel grant</b> , E-Energy 2014	<i>Cambridge, UK</i>
2012	<b>PhD fellowship</b> , TCS Research and Development	
2012	<b>Travel and lodging grant</b> , Microsoft Research Summer School	<i>Bangalore, India</i>
2010	<b>Systems engineering prize barrel</b> , AUVSI's student UAS competition	<i>Maryland, USA</i>
2009	<b>Young scientist travel grant</b> , Department of Science and Technology (Govt. of India)	<i>Delhi, India</i>
2009	<b>Director's award for best effort</b> , AUVSI's student UAS competition	<i>Maryland, USA</i>

## Research Experience

### University of Virginia

POSTDOC. RESEARCHER

*Charlottesville, USA*

*Mar. 2017 - Present*

### IIIT Delhi

GRADUATE RESEARCH ASSISTANT

*Delhi, India*

*Jan. 2012 - Present*

### University of Virginia (under Prof. Kamin Whitehouse)

VISITING RESEARCHER

*Charlottesville, Virginia, USA*

*Jul. 2014 - Apr. 2015*

### Linux Android Network Systems Lab, Delhi College of Engineering

UNDERGRADUATE RESEARCH INTERN

*Delhi, India*

*Dec. 2010 - Jun. 2011*

### Unmanned Aircraft Systems Lab, Delhi College of Engineering

UNDERGRADUATE RESEARCH INTERN

*Delhi, India*

*Dec. 2008 - Jul. 2010*

## Teaching Experience

### Computer Networks (under Prof. Dheeraj Sanghi)

HEAD TA

*IIIT Delhi, India*

*Winter 2016*

### IIITD media team (under Prof. Dheeraj Sanghi)

RESEARCH MEDIA MANAGER

*IIIT Delhi, India*

*Monsoon 2015*

### Embedded Systems (under Dr. Amarjeet Singh)

TA

*IIIT Delhi, India*

*Winter 2013*

### Introduction to Programming (under Dr. Gaurav Gupta)

HEAD TA

*IIIT Delhi, India*

*Monsoon 2012*

## Industrial Experience

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### Royal Bank of Scotland

SOFTWARE ANALYST

*Gurgaon, India*

*Jun. 2011 - Nov. 2011*

### Goldman Sachs

ENGINEERING INTERN

*Bangalore, India*

*Jun. 2010 - Aug. 2010*

## Invited Talks

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2016 **Stanford University**, Towards energy disaggregation for a 100 million homes

*California, USA*

2015 **University of Pennsylvania**, If you can measure it, can you improve it?

*Philadelphia, USA*

2015 **Carnegie Mellon University**, If you can measure it, can you improve it?

*Pittsburgh, USA*

## Professional Service

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2018 **TPC chair**, 4th International NILM workshop

*Austin, Texas, USA*

2016 **Steering committee**, 3rd International NILM workshop

*Canada*

2014 **Program committee**, 2nd International NILM workshop

*Austin, Texas, USA*

2012-16 **External reviewer**, Transactions on Mobile Computing, Buildsys 2015, Ubicomp 2015, E-Energy 2015, E-Energy 2014, ASONAM 2013, E-Energy 2013, ICDM 2013, Buildsys 2013

## Publications(Click [here](#) for Google Scholar Profile)

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### SELECTED PEER-REVIEWED PAPERS

- 2018 [S.7] **Transferring Decomposed Tensors for Scalable Energy Breakdown across Regions**  
**Nipun Batra**, Yiling Jia, Hongning Wang, Kamin Whitehouse  
AAAI 2018. New Orleans, USA (**Acceptance rate: 25%**).
- 2017 [S.6] **Matrix Factorisation for Scalable Energy Breakdown**  
**Nipun Batra**, Hongning Wang, Amarjeet Singh, Kamin Whitehouse  
AAAI 2017. San Francisco, USA (**Acceptance rate: 25%**).
- 2016 [S.5] **Gemello: Creating a Detailed Energy Breakdown from just the Monthly Electricity Bill**  
**Nipun Batra**, Amarjeet Singh, Kamin Whitehouse  
KDD 2016. San Francisco, USA (**Acceptance rate: 19%**).
- 2015 [S.4] **If You Measure It, Can You Improve It? Exploring The Value of Energy Disaggregation**  
**Nipun Batra**, Amarjeet Singh, Kamin Whitehouse  
Buildsys 2015. Seoul, Korea (**Acceptance rate: 29%**).
- 2014 [S.3] **NILMTK: An Open Source Toolkit for Non-intrusive Load Monitoring**  
**Nipun Batra**, Jack Kelly, Oliver Parson, Haimonti Dutta, William Knottenbelt, Alex Rogers, Amarjeet Singh, and Mani Srivastava  
ACM eEnergy 2014. Cambridge, UK (**Acceptance rate: 20%, 140+ citations**)
- 2013 [S.2] **It's Different: Insights into home energy consumption in India**  
**Nipun Batra**, Manoj Gulati, Amarjeet Singh, and Mani Srivastava  
Buildsys 2013, Rome, Italy (**60+ citations**)
- 2012 [S.1] **SensorAct: A Privacy and Security Aware Federated Middleware for Building Management**  
Pandarasamy Arjunan, **Nipun Batra**, Haksoo Choi, Amarjeet Singh, Pushpendra Singh, and Mani B. Srivastava  
Buildsys 2012, Waterloo, Canada

### OTHER PEER-REVIEWED PAPERS

- 2015 [0.3] **Dataport and NILMTK: A Building Data Set Designed for Non-intrusive Load Monitoring**  
Oliver Parson, Grant Fisher, April Hersey, **Nipun Batra**, Jack Kelly, Amarjeet Singh, William Knottenbelt, Alex Rogers  
GlobalSip, Orlando, FL, USA

- 2013 [0.2] **INDiC: Improved Non-Intrusive load monitoring using load Division and Calibration**  
Nipun Batra, Haimonti Dutta and Amarjeet Singh  
ICMLA 2013, Miami, USA
- 2013 [0.1] **Experiences with Occupancy Based Building Management Systems**  
Nipun Batra, Pandarasamy Arjunan, Amarjeet Singh and Pushpendra Singh  
ISSNIP 2013, Melbourne, Australia

## POSTERS, DEMOS, AND SHORT PAPERS

- 2015 [P.3] **Non Intrusive Load Monitoring: Systems, Metrics and Use Cases**  
Nipun Batra  
Sensys 2015 (**Best presentation award**)
- 2014 [P.2] **NILMTK v0. 2: A Non-intrusive Load Monitoring Toolkit for Large Scale Data Sets**  
Jack Kelly, Nipun Batra, Oliver Parson, Haimonti Dutta, William Knottenbelt, Alex Rogers, Amarjeet Singh, and Mani Srivastava  
Buildsys 2014 (**Best demo award**)
- 2014 [P.1] **Bits and watts: improving energy disaggregation performance using power line communication modems**  
Nipun Batra, Manoj Gulati, Puneet Jain, Kamin Whitehouse and Amarjeet Singh  
Buildsys 2014

## TECHNICAL REPORTS

- 2015 [T.4] **How good is good enough? Re-evaluating the bar for energy disaggregation**  
Nipun Batra, Rishi Baijal, Amarjeet Singh, Kamin Whitehouse
- 2015 [T.3] **Neighbourhood NILM: A Big-data Approach to Household Energy Disaggregation**  
Nipun Batra, Amarjeet Singh, Kamin Whitehouse
- 2014 [T.2] **A comparison of non-intrusive load monitoring methods for commercial and residential buildings**  
Nipun Batra, Oliver Parson, Mario Berges, Amarjeet Singh, Alex Rogers
- 2014 [T.1] **Data Driven Energy Efficiency in Buildings**  
Nipun Batra, Amarjeet Singh, Pushpendra Singh, Haimonti Dutta, Venkatesh Sarangan, and Mani Srivastava

## Mentoring and students

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|------|--|----------------------------|
| 2017 | <b>Anmol Singh</b> , Factorisation for scalable energy breakdown | <i>Independent project</i> |
| 2015 | <b>Rishi Baijal</b> , Non-intrusive occupancy detection          | <i>Bachelor's thesis</i>   |
| 2013 | <b>Ishaan Malhotra</b> , Smart meter based energy disaggregation | <i>Bachelor's thesis</i>   |
| 2013 | <b>Akshit Gupta</b> , Appliance energy modelling                 | <i>Independent project</i> |
| 2013 | <b>Ayushi Aggarwal</b> , Reproducible energy disaggregation      | <i>Independent project</i> |