

# NIRUPAM ROY

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## RESEARCH INTERESTS

**Core:** Sensing, Mobile Computing, Cyber-Physical Systems, Wireless Networking  
**Application:** IoT, Localization, Healthcare, Security, Wearables

## EDUCATION

**Ph.D. Candidate**, Electrical and Computer Engineering  
University of Illinois at Urbana-Champaign  
Advisor: Prof. Romit Roy Choudhury

**Master of Science**, Computer Science and Engineering, 2013  
University of South Carolina  
GPA: 4.0/4.0 (**Outstanding Thesis Award**)  
Advisor: Prof. Srihari Nelakuditi

**Bachelor of Engineering**, Computer Science and Technology, 2007  
IEST (formerly B.E.College), Shibpur  
GPA: 3.9/4.0 (**Best Thesis Award**)  
Advisor: Prof. Abhik Mukherjee

## AWARDS & HONORS

- Best paper award at MobiSys, 2017
- Research selected for SIGMOBILE Highlights 2017
- Qualcomm Innovation Fellowship (QInF), 2016 finalist
- Joan and Lalit Bahl Fellowship, 2015-2017 in ECE, UIUC as outstanding graduate student.
- M. E. Van Valkenburg Graduate Research Award and Fellowship, 2015 in ECE, UIUC for outstanding research in the areas of circuits, systems, or computers
- Outstanding thesis award, 2013 for MS thesis at the University of South Carolina
- Best poster runner-up at HotMobile, 2013
- Best undergraduate thesis award, 2007 at the IEST (formerly B.E.College), Shibpur
- 10th rank in Secondary Examination(2001) among around 700,000 examinees, according to the merit list published by 'West Bengal Board of Secondary Education'

## PUBLICATIONS

Acoustic Noise Cancellation over IoT  
Sheng Shen, **Nirupam Roy**, J. Guan, Haitham Hassanieh, Romit Roy Choudhury  
SIGCOMM 2018

Inaudible Voice Commands: The Real-World Attack and Defense  
**Nirupam Roy**, Sheng Shen, Haitham Hassanieh, Romit Roy Choudhury  
NSDI 2018

BackDoor: Making Microphones Hear Inaudible Sounds  
**Nirupam Roy**, Haitham Hassanieh, Romit Roy Choudhury  
ACM MobiSys 2017

Ripple II: Faster Communication through Physical Vibration  
**Nirupam Roy**, Romit Roy Choudhury  
NSDI 2016

Listening through a Vibration Motor  
**Nirupam Roy**, Romit Roy Choudhury  
ACM MobiSys 2016

Compressing Backoff in CSMA Networks  
Mahanth Gowda, **Nirupam Roy**, Romit Roy Choudhury, Srihari Nelakuditi  
IEEE ICNP 2016

Ripple: Communicating through Physical Vibrations  
**Nirupam Roy**, Mahanth K Gowda, Romit Roy Choudhury  
NSDI 2015

I am a Smartphone and I can Tell my User's Walking Direction  
**Nirupam Roy**, He Wang, Romit Roy Choudhury  
ACM MobiSys 2014

AccelPrint: Imperfections of Accelerometers Make Smartphones Trackable  
**Nirupam Roy**, S. Dey (Co-primary author), W. Xu, R. Roy Choudhury, S. Nelakuditi  
NDSS 2014

Infrastructure Mobility: A What-if Analysis  
Mahanth K Gowda, **Nirupam Roy**, Romit Roy Choudhury  
ACM HotNets 2014

Backing out of Linear Backoff in Wireless Networks  
Mahanth K Gowda, **Nirupam Roy**, Romit Roy Choudhury, Srihari Nelakuditi  
ACM HotWireless 2014

## **JOURNAL ARTICLES**

Loop-Free Convergence with Unordered Updates  
Glenn Robertson, **Nirupam Roy**, P. K. Penumarthi, Srihari Nelakuditi, Jason O'Kane  
IEEE Transaction on Network and Service Management, 2017

RFID Enabled Navigation System of an Autonomous Robotic Guide  
S. Bandyopadhyay, **Nirupam Roy**, A. Banerjee, A. Chanda, A. Mukherjee, S. Barat  
CSI Communications, November 2008, Computer Society of India

## **POSTERS & DEMOS**

**ACM MobiSys 2017**  
**Demo:** Riding the Non-linearities to Record Ultrasound with Smartphones  
Niagara Falls, New York, United States

**ACM MobiCom 2016**  
**Poster:** Assessing Header Impacts in Soccer with Smartball  
New York, United States

**NSDI 2016**  
**Poster:** Vibration: A new mode of communication  
Mountain View, California, United States

**Google Faculty Mobile Summit 2015**  
**Poster:** Ripple: Communicating through Physical Vibration  
Mountain View, California, United States

**ACM MobiSys 2014**

**Demo:** I am a Smartphone and I can Tell my User's Walking Direction  
Bretton Woods, New Hampshire, United States

**ACM HotMobile 2013**

**Poster:** Leveraging Imperfections of Sensors for Fingerprinting Smartphones  
Jekyll Island, Georgia, United States

**INVITED  
TALKS**

**ACM HotWireless**

**Talk:** Opening a Microphone's Backdoor: Hype, Threats, and Opportunities  
October 16, 2017  
Snowbird, Utah, United States

**Microsoft Student Summit on Mobility, Systems and Networking**

**Talk:** Communicating through Physical Vibration  
February 1-2, 2016  
Petaluma, California, United States

**Huawei University Day**

**Talk:** Physical Vibration: A New Modality of Communication  
August 6-7, 2015  
Rolling Meadows, Illinois, United States

**Feedback Friday in Computer Engineering, UIUC**

**Talk:** Ripple: Communicating through Physical Vibration  
March 20, 2015  
Champaign, Illinois, United States

**TEACHING  
& TUTORIALS**

**Teaching Assistant**

**Course:** Mobile Sensing, Computing, and Applications (ECE/CS-498)  
Spring 2016, UIUC

**Tutorial workshop**

**Topic:** Android Programming and Smartphone Sensors  
February 8, 2016, UIUC

**Guest Lecture:** Sensing Out-of-band Sound through Channel Nonlinearity

**Course:** Embedded Digital Signal Processing (ECE-420)  
Fall 2017, UIUC

**Guest Lecture:** Sound and Vibration Sensing

**Course:** Mobile Sensing and Sensor Fusion (ECE-598RR)  
Spring 2017, UIUC

**Guest Lecture:** Short-distance Communication Modalities

**Course:** Wireless Networks and Mobile Systems (ECE-598HH)  
Fall 2016, UIUC

**Guest Lecture:** Walking Direction Estimation with On-body Sensors

**Course:** Mobile Sensing, Computing, and Applications (ECE/CS-498)  
Spring 2016, UIUC

**Guest Lecture:** Communication through Physical Vibration  
**Course:** Mobile Sensing, Computing, and Applications (ECE/CS-498)  
Spring 2016, UIUC

## **PATENTS**

Communicating through physical vibration  
**Nirupam Roy**, Romit Roy Choudhury, Mahanth K. Gowda  
Patent granted: US 9608848 B2

Unsupervised Indoor Localization and Heading Direction Estimation  
Romit Roy Choudhury, H. Wang, **Nirupam Roy**, S. Sen, M. Youssef, et al.  
Patent pending: US 20150281910 A1

## **MEDIA COVERAGE**

- AccelPrint: MIT Technology Review, The Telegraph UK, The Voice of Russia, ...
- VibraPhone: TechCrunch, Engadget, Slashdot, ...
- BackDoor: Curiosity, The Science Times, EE-News Europe, ...
- LipRead: The New York Times, The Morning Paper, ...

## **ACTIVITIES & SERVICES**

- Technical Program Committee (TPC) member:
  - MobiSys Ph.D. Forum 2017
  - ACM S3 Workshop 2017
- Invited reviewer:
  - UbiComp 2016 (ACM Conference on Pervasive and Ubiquitous Computing)
  - IEEE Transactions on Mobile Computing (TMC)
  - IEEE Transactions on Information, Forensics, and Security
  - Elsevier Pervasive and Mobile Computing journal
- Volunteer at ‘Illini Fighting Hunger’ initiative for underprivileged children
- Student president of the Computer Engineers’ Society of Bengal Engineering College (CoEnSoBEC) from 2005 to 2007
- A cartoonist by hobby