

Sougata Sen

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Research Interest:

My research interest lies in the area of lifestyle analytics. I am interested in building systems which can automatically and unobtrusively monitor various daily life activities performed by an individual in free living conditions. To achieve this goal, I primarily focus on applying suitable machine learning techniques on sensor data extracted from various personal devices (smartwatches, smartphones, etc.). Additionally, I utilize sensor data from IoT/ infrastructure devices when information from such infrastructure devices can be beneficial.

Education:

Jan 2012 – May 2017: Singapore Management University, Singapore

Ph.D. in Information Systems

Dissertation Committee: Prof. Archan Misra (SMU, chair), Prof. Rajesh K. Balan (SMU), Prof. Youngki Lee (SMU), Prof. Andrew T. Campbell (Dartmouth College)

Dissertation Title: Fusing Mobile, Wearable and Infrastructure Sensing for Immersive Daily Lifestyle Analytics

Aug 2014 – May 2015: Carnegie Mellon University, Pittsburgh, PA, USA

Exchange Student

Advisor: Prof. Jason I. Hong

Sep 2001 – June 2005: Visveswararajah Technological University, KA, India

B.E. (Electronics and Communication)

Achieved a “First Class”

Professional Experience:

Dec 2017 – Present: Dartmouth College, Hanover, NH, USA

Position: Postdoctoral Scholar

Supervisor: Prof. David F. Kotz

Responsibilities: Develop techniques to achieve reliable and trustworthy mHealth solutions

July 2017 – Nov 2017: Livelabs, Singapore Management University, Singapore

Position: Research Fellow

Supervisor: Prof. Archan Misra

Responsibilities: Build systems to monitor an individual’s daily life activities.

May 2015 – Aug 2015: Samsung Research America, Mountain View, CA

Position: Summer Intern

Mentor: Shalinder Sidhu

Responsibilities: Opportunistically collecting sensor data from personal devices of the visitors of a shopping mall to determine semantic label of areas in the mall.

May 2013 – July 2013: IBM India Research Lab, New Delhi, India

Position: Summer Intern

Mentor: Dr. Dipanjan Chakraborty

Responsibilities: Identifying high level shopping behavioral traits of shoppers visiting a shopping mall by analyzing the smartphone's sensor traces.

Sep 2005 – Dec 2011: SETLabs, Infosys Ltd., Bangalore, India

Position: Technology Lead

Supervisor: Dr. Kumar Padmanabh

Responsibilities: Conceptualizing ideas and creating proof of concepts in the areas of 'Wireless Sensor Networks', 'Sustainability' and 'Internet of Things'.

Thesis:

[T1] **Sougata Sen**, "Fusing mobile, wearable and infrastructure sensing for immersive daily lifestyle analytics", Ph.D. thesis advised by Prof. Archan Misra, at School of Information Systems, Singapore Management University, 2017.

Journal, Conference and Workshop Publication:

[P18] **Sougata Sen**, Archan Misra, Vigneshwaran Subbaraju, Karan Grover, Meera Radhakrishnan, Rajesh K. Balan, Youngki Lee, "I⁴S: Capturing Shopper's In-store Interactions", *In proceedings of 22nd International Symposium on Wearable Computers (ISWC, 2018)*

[P17] **Sougata Sen**, Vigneshwaran Subbaraju, Archan Misra, Rajesh Balan, Youngki Lee, "Annapurna: Building a Real-World Smartwatch-based Automated Food Journal", *In 19th IEEE International symposium on a World of Wireless, Mobile and Multimedia networks (WOWMOM 2018)*.

[P16] Meera Radhakrishnan, **Sougata Sen**, Archan Misra, Rajesh Balan, Youngki Lee, "Smart Monitoring via Participatory BLE Relaying". *In 10th IEEE International Conference on COMMunication Systems & NETWORKS (COMSNETS, 2018)*.

[P15] Tianli Mo, Lipyeow Lim, **Sougata Sen**, Archan Misra, Rajesh Balan, Youngki Lee. "Cloud-based query evaluation for energy-efficient mobile sensing". *Pervasive and Mobile Computing, Volume 38, 2017, Pages 257-274, ISSN 1574-1192*.

[P14] **Sougata Sen**, Vigneshwaran Subbaraju, Archan Misra, Rajesh Balan and Youngki Lee. "Experiences in Building a Real-World Eating Recogniser". *In 4th International on Workshop on Physical Analytics (WPA 2017)*.

[P13] **Sougata Sen**, Karan Grover, Vigneshwaran Subbaraju, and Archan Misra. "Inferring smartphone keypress via smartwatch inertial sensing". *In Pervasive Computing and Communications Workshops (PerCom Workshops, 2017)*

[P12] **Sougata Sen**, Kiran K. Rachuri, Abhishek Mukherji, and Archan Misra. "Did you take a break today? Detecting playing foosball using your smartwatch". *In Pervasive Computing and Communication Workshops (PerCom Workshops, 2016)*

[P11] Meera Radhakrishnan, **Sougata Sen**, S. Vigneshwaran, Archan Misra, and Rajesh Balan. "IoT+ Small Data: Transforming in-store shopping analytics & services". *In 8th International Conference on Communication Systems and Networks (COMSNETS, 2016)*

[P10] **Sougata Sen**. Pervasive physical analytics using multi-modal sensing. *In 8th International Conference on Communication Systems and Networks (COMSNETS, 2016)*

[P9] Vigneshwaran Subbaraju, **Sougata Sen**, Archan Misra, Satyadip Chakroborty, Rajesh Balan. Using Infrastructure-provided Context Filters for Efficient Fine-grained Activity Sensing. *In International Conf. on Pervasive Computing and Communication (PerCom, 2015)*

[P8] **Sougata Sen**, Vigneshwaran Subbaraju, Archan Misra, Rajesh Balan, Youngki Lee. The Case for Smartwatch-based Diet Monitoring. *In Pervasive Computing and Communication Workshops (PerCom Workshops, 2015)* **[Best Paper Award]**

[P7] **Sougata Sen**. Opportunities and Challenges in multi-modal sensing for regular lifestyle tracking. *In Pervasive Computing and Communication Workshops (PerCom Workshops, 2015)*

[P6] **Sougata Sen**, Dipanjan Chakraborty, Vigneshwaran Subbaraju, Dipyaman Banerjee, Archan Misra, Nilanjan Banerjee, Sumit Mittal. Accommodating User Diversity for In-Store Shopping Behavior Recognition. *In proceedings of 18th International Symposium on Wearable Computers (ISWC, 2014)*

[P5] Tianli Mo, **Sougata Sen**, Lipyeow Lim, Archan Misra, Rajesh Balan, Youngki Lee. Cloud-based Query Evaluation for Energy-Efficient Mobile Sensing. *In proceedings of 15th IEEE International Conference on Mobile Data Management (MDM, 2014)*

[P4] **Sougata Sen**, Kartik Muralidharan. Putting ‘Pressure’ on Mobile Authentication. *In proceedings of International conference on Mobile and Ubiquitous networking (ICMU, 2014)*

[P3] **Sougata Sen**, Archan Misra, Rajesh Balan, and Lipyeow Lim. The case for cloud-enabled mobile sensing services. *In Proceedings of the first edition of the MCC workshop on Mobile cloud computing (MCC@SIGCOM, 2012).*

[P2] Kumar Padmanabh, Adi Malikarjuna, V, **Sougata Sen**, Siva Prasad Katru, Amrit Kumar, Sai Pawankumar C, Sunil Kumar Vuppala, and Sanjoy Paul. iSense: a wireless sensor network based conference room management system. *In Proceedings of the First ACM Workshop on Embedded Sensing Systems for Energy-Efficiency in Buildings (BuildSys, 2009)*

[P1] Kumar Padmanabh, Adi Malikarjuna, V, **Sougata Sen**, Puneet Gupta, Random Walk on Random Graph based Outlier Detection in Wireless Sensor Networks. *Wireless Communication and Sensor Networks. (WCSN, 2007).*

Patents:

[PT3] Kumar Padmanabh, Puneet Gupta, **Sougata Sen**. *System and method for forming application dependent dynamic data packet in wireless sensor networks* (US Patent 8,588,192)

[PT2] Kumar Padmanabh, Adi M. R. Vanteddu, **Sougata Sen**, Amrit Kumar, Puneet Gupta, Lakshya Malhotra, Sunil Vuppala, *Method and system for creating a virtual wireless sensor network* (US Patent 8,649,298)

[PT1] **Sougata Sen**, Ketan Patil, Animikh Ghosh, Parag Chauhan, Kumar Padmanabh, *Method and system to dynamically detect and form a master slave network.* (US Patent 8,873,429)

Book Chapter:

[B1] Kumar Padmanabh, **Sougata Sen**, Sanjoy Paul. ZigBee versus Other Protocols and Standards. In ZigBee® Network Protocols and Applications (pp. 301-344). Auerbach Publications.

Professional Services:

Program Committee member:

IEEE WristSense'18

IEEE MASS'18

IEEE COMSNETS'19 Graduate Forum

UbiComp'18 Doctoral Colloquium

Web chair:

UbiComp'18

Reviewer:

PACM on Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT) '17, '18

IEEE Transactions on Mobile Computing

Elsevier Pervasive and Mobile Computing

ISWC '14