

# Suraj Jog

PHD CANDIDATE, ELECTRICAL AND COMPUTER ENGINEERING,  
UNIVERSITY OF ILLINOIS AT URBANA-CHAMPAIGN

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## EDUCATION

### University of Illinois at Urbana-Champaign

*PhD Candidate*, Electrical and Computer Engineering

Advisor: Prof. Haitham Hassanieh

Overall GPA: 4.0/4.0

*Aug 2016 - Present*

### Indian Institute of Technology (IIT) Bombay, India

*Bachelor of Technology (with Honors)*, Electrical Engineering

Overall GPA: 9.32/10

*Jul 2012 - May 2016*

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## RESEARCH INTERESTS

Wireless Networking and RF systems, IoT and Low Power Wide-Area Networks (LPWANs), and Machine Learning

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## AWARDS AND HONORS

M. E. Van Valkenburg Graduate Research Award, ECE Dept, UIUC

*2019-20*

Presented my work to Mr. Bill Gates during his visit to our FarmBeats deployment site. The work also featured in an article on Bill Gates' blog, GatesNotes.

*2018*

First Position in SIGCOMM'18 Student Research Competition (SRC) (Graduate Category)

*2018*

ECE Rambus Fellowship, UIUC

*2018-19*

Qualified to second stage of Qualcomm Innovation Fellowship

*2018*

Cargill Global Scholarship

*2014-16*

All India Rank 24 in IIT Joint Entrance Exam (top 0.005% in India)

*2012*

Student Travel Grants: SIGCOMM'18, NSDI'19

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## PUBLICATIONS

Many-to-Many Beam Alignment in Millimeter Wave Networks

**Suraj Jog**, Jiaming Wang, Junfeng Guan, Haitham Hassanieh, Romit Roy Choudhury, et al.

**NSDI 2019**, USENIX Symposium on Networked Systems Design and Implementation

An Experimental Study of the Treewidth of Real-World Graph Data

Silviu Maniu, Pierre Senellart, **Suraj Jog**

**ICDT 2019**, International Conference on Database Theory

Sharing within limits: Partial resource pooling in loss systems

Anvitha Nandigam, **Suraj Jog**, D. Manjunath, Jayakrishnan Nair, Balakrishna Prabhu

Under Review: IEEE/ACM Transactions on Networking

Une étude expérimentale de la largeur d'arbre de données graphe du monde réel

Silviu Maniu, Pierre Senellart, **Suraj Jog**

**BDA 2018**, Conference on Data Management - Principles, Technologies and Applications

*Poster: Enabling Dense Spatial Reuse in mmWave Networks*  
**Suraj Jog**, Jiaming Wang, Haitham Hassanieh, Romit Roy Choudhury  
**SIGCOMM 2018**, ACM Special Interest Group on Data Communication  
**First Position in Student Research Competition (SRC)**

*Poster: Multi-User Wireless Virtual Reality with Millimeter Wave Networks*  
**Suraj Jog**, Anadi Chaman, Haitham Hassanieh  
**NSF Millimeter-Wave RCN Workshop 2017**

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## INVITED TALKS

**CSL Student Conference 2019, UIUC**  
Talk: FarmBeats - AI and IoT for Agriculture  
February 7, 2019  
Illinois, United States

**Microsoft Research, Redmond**  
Talk: Long Range IoT Networks - From Communication to Sensing  
August 10, 2018  
Washington, United States

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## WORK EXPERIENCE

**FarmBeats: AI and IoT platform for data driven agriculture** *Summer 2018*  
Research Intern, Microsoft Research, Redmond | Dr. Ranveer Chandra

- **Project 1: LoRa for RF Sensing**  
Designed a low-cost RF-based wind sensor, that reduces cost from 100 USD to less than 2 USD. Presented a working prototype to Mr. Bill Gates during his visit to our farm.
- **Project 2: Networking for Long-Range IoT radios**  
Designed intelligent cross-layer MAC and channel selection protocols for low-power IoT radios over the TV White spaces for scalable networking solutions for sensors in farms.
- FarmBeats was listed as one of the ten projects that inspired Satya Nadella, and is one of the flagship projects for Microsoft AI for Earth.

**Metric Learning with Random Forests** *Summer 2015*  
Research Intern, Siemens, India | Dr. Amit Kale

- Designed a metric learning framework using Supervised Random Forests integrated with WTA-Hash, in order to quantify the similarity between two images under noisy conditions
- Achieved reduction in False Positive Rate from 3.5 % to 0.4 % (at 95 % True Positive Rate) for the task of classifying images as similar or dissimilar in standard image datasets

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## ACTIVITIES AND SERVICES

**Web Chair**  
*mmNets 2017, 1st ACM Workshop on Millimeter-Wave Networks and Sensing Systems*  
Snowbird, Utah, Oct 2017

**Student Organizer**  
*Techfest 2013, Annual Science and Technology Festival, IIT Bombay*  
Mumbai, India, Dec 2013

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TEACHING EXPERIENCE	<b>Teaching Assistant</b> ECE 598HH: Wireless Networks and Mobile Systems (UIUC)	<i>Spring 2018</i>
	<b>Teaching Assistant</b> ECE 438: Communication Networks (UIUC)	<i>Fall 2017</i>
	<b>Teaching Assistant</b> PH 103: Electricity and Magnetism (IIT Bombay)	<i>Fall 2014 &amp; Fall 2015</i>

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EXTRA- CURRICULAR ACTIVITIES	<ul style="list-style-type: none"> <li>• Secured First Position in Oman National-Level Chess Tournament (Junior Category)</li> <li>• Top 40 contestants from Mumbai in Indian Idol 2012 (Singing Reality Competition)</li> <li>• Elected as <i>Institute Cultural Mentor for Music 2013-14</i>, to mentor a batch of 880 freshmen</li> </ul>
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REFERENCES	<p><b>Prof. Haitham Hassanieh</b> (Advisor) ECE &amp; CS, University of Illinois at Urbana-Champaign Email: <a href="mailto:haitham@illinois.edu">haitham@illinois.edu</a> Website: <a href="http://haitham.ece.illinois.edu">http://haitham.ece.illinois.edu</a></p> <p><b>Prof. Romit Roy Choudhury</b> ECE &amp; CS, University of Illinois at Urbana-Champaign Email: <a href="mailto:croy@illinois.edu">croy@illinois.edu</a> Website: <a href="http://croy.web.engr.illinois.edu">http://croy.web.engr.illinois.edu</a></p> <p><b>Dr. Ranveer Chandra</b> Chief Scientist, Microsoft Azure Global Email: <a href="mailto:ranveer@microsoft.com">ranveer@microsoft.com</a> Website: <a href="https://www.microsoft.com/en-us/research/people/ranveer">https://www.microsoft.com/en-us/research/people/ranveer</a></p> <p><b>Prof. D. Manjunath</b> EE, Indian Institute of Technology (IIT) Bombay Email: <a href="mailto:dmanju@ee.iitb.ac.in">dmanju@ee.iitb.ac.in</a> Website: <a href="https://www.ee.iitb.ac.in/~dmanju">https://www.ee.iitb.ac.in/~dmanju</a></p>
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