

VIKRAM IYER

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Paul G. Allen Center, Department of Electrical and Computer Engineering

EDUCATION

University of Washington

2015 - Present

PhD Candidate

Department of Electrical and Computer Engineering

University of California Berkeley

2011 - 2015

Bachelor of Science

Department of Electrical Engineering and Computer Science

RESEARCH AND WORK EXPERIENCE

University of Washington

July 2015 - present

Network and Mobile Systems Lab

Advisor: Shyamnath Gollakota

My research focuses on novel wireless technologies for communication, power and sensing. Most recently I have been developing bio-inspired and bio-integrative systems such as insect-scale aerial robots, sensor platforms small enough to fly on live bumblebees and cameras that can ride on the back of a beetle. This includes designing and building ultra-low power communication using backscatter, acoustic and RF based localization techniques, antenna design, and wireless power transfer systems. I have also made contributions in human-computer interaction and fabrication such as sonar based finger tracking, communicating through the body, and 3D printable wireless communication.

Microsoft Research

Mar 2019 - present

Project Eclipse

Project Eclipse is a low-cost wireless, cloud-connected air quality sensing platform designed to be deployed at scale to enable hyper-local measurements of air pollution. I helped define the project's focus on measuring pollutants with known health effects, and have been an integral part of designing, developing, calibrating, and testing the sensor platform as well as planning pilot deployments in Boston, Kenmore, and Miami.

University of California Berkeley

May 2014 - July 2015

Sensor Electronics Research Group

Advisors: Bernhard Boser, Dorian Liepmann

In this project I fabricated plastic microfluidic systems for a magnetic label flow cytometer and focused on developing a scalable technique for integrating CMOS sensors into plastic Lab-on-a-chip devices.

AWARDS & FELLOWSHIPS

Ubicomp Outstanding Student Award 2020 Finalist

Marconi Society Paul Baran Young Scholar Award 2020

Sensys 2018 Best Paper Award for

“3D Localization for Sub-Centimeter Sized Devices”

Microsoft Research PhD Fellowship – 2018

SIGCOMM 2016 Best Paper Award for

“Inter-Technology Backscatter: Towards Internet Connectivity for Implanted Devices”

CHI 2016 Honorable Mention for

“FingerIO: Using Active Sonar for Fine-grained Finger Tracking”

Outstanding Course Development and Teaching Award 2015 - 2016 at UC Berkeley

TEACHING

CSE461: “Introduction to Computer Communication Networks”

Winter 2018

TA for undergraduate networks class. Work included teaching weekly discussion sections, grading as well as teaching some lectures.

EE16A: “Designing Information Devices and Systems”

Spring 2015

Head lab TA for pilot offering of the entirely re-designed introductory electrical engineering series. Created original lab assignments and all supporting material, coordinated and trained course staff in lab procedures. Work also included teaching lab sections, and grading.

PUBLICATIONS

1. Vikram Iyer, Maruchi Kim, Shirley Xue, Anran Wang, and Shyamnath Gollakota. Airdropping sensor networks from drones and insects. In *Proceedings of the 26th Annual International Conference on Mobile Computing and Networking, MobiCom '20*, New York, NY, USA, 2020. Association for Computing Machinery
2. Vikram Iyer, Ali Najafi, Johannes James, Sawyer Fuller, and Shyamnath Gollakota. Wireless steerable vision for live insects and insect-scale robots. *Science Robotics*, 5(44), 2020
3. Mehrdad Hesar, Ali Najafi, Vikram Iyer, and Shyamnath Gollakota. TinySDR: Low-power sdr platform for over-the-air programmable iot testbeds. In *17th USENIX Symposium on Networked Systems Design and Implementation (NSDI 20)*. USENIX Association, 2020
4. Vikram Iyer, Rajalakshmi Nandakumar, Anran Wang, Sawyer Fuller, and Shyamnath Gollakota. Living IoT: A flying wireless platform on live insects. In *The 25th Annual International Conference on Mobile Computing and Networking (MobiCom 19)*. ACM, 2019
5. Rajalakshmi Nandakumar, Vikram Iyer, and Shyamnath Gollakota. 3D localization for sub-centimeter sized devices. In *Proceedings of the 16th ACM Conference on Embedded Networked Sensor Systems*, pages 108–119. ACM, 2018
6. Vikram Iyer, Justin Chan, Ian Culhane, Jennifer Mankoff, and Shyamnath Gollakota. Wireless analytics for 3D printed objects. In *The 31st Annual ACM Symposium on User Interface Software and Technology*, pages 141–152. ACM, 2018
7. Johannes James, Vikram Iyer, Yogesh Chukewad, Shyamnath Gollakota, and Sawyer Fuller. Liftoff of a 190 mg Laser-Powered Aerial Vehicle: The Lightest Untethered Robot to Fly. ICRA 2018
8. Vikram Iyer, Elyas Bayati, Rajalakshmi Nandakumar, Arka Majumdar, and Shyamnath Gollakota. Charging a Smartphone Across a Room Using Lasers. IMWUT 2018
9. Vikram Iyer, Justin Chan, and Shyamnath Gollakota. 3D Printing Wireless Connected Objects. In *SIGGRAPH Asia 2017, SA '17*, pages 242:1–242:13, New York, NY, USA, 2017. ACM
10. Anran Wang, Vikram Iyer, Vamsi Talla, Joshua R. Smith, and Shyamnath Gollakota. FM backscatter: Enabling Connected cities and Smart Fabrics. In *14th USENIX Symposium on Networked Systems Design and Implementation (NSDI 17)*, pages 243–258, Boston, MA, 2017. USENIX Association

11. Mehrdad Hesar, Vikram Iyer, and Shyamnath Gollakota. Enabling on-body transmissions with commodity devices. In *Proceedings of the 2016 ACM International Joint Conference on Pervasive and Ubiquitous Computing, UbiComp '16*, pages 1100–1111, New York, NY, USA, 2016. ACM
12. Vikram Iyer, Vamsi Talla, Bryce Kellogg, Shyamnath Gollakota, and Joshua Smith. Inter-technology backscatter: Towards internet connectivity for implanted devices. In *Proceedings of the 2016 ACM SIGCOMM Conference, SIGCOMM '16*, pages 356–369, New York, NY, USA, 2016. ACM
13. Rajalakshmi Nandakumar, Vikram Iyer, Desney Tan, and Shyamnath Gollakota. Fingerio: Using active sonar for fine-grained finger tracking. In *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems, CHI '16*, pages 1515–1525, New York, NY, USA, 2016. ACM
14. Vikram Iyer, Pramod Murali, Jacobo Paredes, Dorian Liepmann, and Bernhard Boser. Encapsulation of integrated circuits in plastic microfluidic systems using hot embossing. In *2015 Transducers - 2015 18th International Conference on Solid-State Sensors, Actuators and Microsystems (TRANSDUCERS)*, pages 1822–1825, June 2015