

# SABUR HASSAN BAIDYA

## CURRICULUM VITAE

Email: [sabur.baidya@louisville.edu](mailto:sabur.baidya@louisville.edu)

Phone: 972-489-9637

Website: <http://saburbaidya.com/>

---

**CURRENT POSITION**      **Assistant Professor**      July 2021 - Present  
**University of Louisville**  
Computer Science and Engineering Dept.  
J.B. Speed School of Engineering  
Louisville, KY  
Affiliation, Louisville Automation and Robotics Research Institute (LARRI)

**EDUCATION**

**University of California, Irvine**      Sept.'14 - Sept.'19  
Ph.D. in Computer Science      GPA: 3.95/4  
**Thesis:** *Adaptive Communications for Intelligent and Autonomous Systems in the Urban IoT*      Advisor: Dr. Marco Levorato  
**Awards:** Graduate Fellowship, Best Poster Award, People's Choice Award

**University of Texas at Dallas**      Aug.'11 - Aug.'13  
M.S. in Computer Science      GPA: 3.96/4  
**Thesis:** *Performance Improvement of Multipath-TCP over Non-uniform Paths using Slow Path Adaptation*      Advisor: Dr. Ravi Prakash  
**Awards:** Certificate of Academic Excellence

**West Bengal University of Technology, India**      Aug.'03 - Aug.'07  
B.Tech in Electronics & Communication Engineering      GPA: 8.93/10  
**Class rank:** **2nd** in a class of **65** students  
**Thesis:** *Sequence Detection & Channel State Estimation on Hidden Markov Modeled Flat Fading Channel*  
**Awards:** IDB Scholarship for 4 years

**PAST APPOINTMENTS**

**University of California, San Diego**      Oct.'19 - Jun'21  
*Postdoctoral Scholar*, ECE Department      San Diego, CA  
Mobile Systems Design Lab      Supervisor: Prof. Sujit Dey

**Nokia Bell Labs**      Jun.'17 - Sept.'17  
*Research Intern*,      Murray Hill, NJ  
Edge-Cloud Research Group      Supervisor: Dr. Prasanth Ananth

**Futurewei Research Lab**      Jun.'16 - Sept.'16  
*Research Intern*, Network Virtualization Group      Santa Clara, CA

**Cisco Systems**      Sept.'13 - Sept.'14  
*Software Engineer*, Software Routing Group for 3G/4G      San Jose, CA

**BlackBerry Ltd.**      Jan.'13 - May'13  
*Software Developer Intern*, Radio Applications R&D      Irving, TX

**WINLAB, Rutgers University**      May'12 - Aug.'12  
*Summer Research Intern*      North Brunswick, NJ  
Project: Mobility First Future Internet Architecture      Supervisor: Dr. Dipankar Ray

**IBM**      Sept.'07 - Jun.'11  
*Senior System Engineer*, Telecom Group      Noida, India

## FUNDING

- **NSF EPSCOR Grant (Award #1849213):** “RII Track-1: Kentucky Advanced Manufacturing Partnership for Enhanced Robotics and Structures.” (Role: Senior Personnel)

## HONORS & AWARDS

- **People’s Choice Award** for the best research talk at the Graduate Research Symposium, UCI. 2018
- **Best Poster Award** in Computer Science Research Showcase, UCI. 2016
- **Third best poster award** in Intern Research Showcase at Huawei Research Labs, Santa Clara, CA. 2016
- Selected among **8 teams nationwide** for DARPA SDR Hackfest 2017
- **Mentoring Excellence** Stipend award, GRC, UCI. 2015 - 2017
- **Graduate Fellowship** from Computer Science dept. of UC Irvine. 2014
- **Certificate of Academic Excellence**, for outstanding performance in the Computer Science Department, University of Texas at Dallas. 2013
- Nominated for ‘**Golden Key International Honour Society**’ by the University of Texas at Dallas for academic excellence. 2012
- **5th Place award** in the workshop and competition on Cyber Security and ethical hacking at TexSAW in University of Texas at Dallas. 2011
- **Conference Travel Grant Awards:**
  - **NSF travel grant** offer for ACM SIGCOMM Conference (declined). 2019
  - **AFRL travel grant** for presenting poster at Beyond 5G Showcase. 2019
  - **NSF travel grant** for attending ACM MobiHoc Conference. 2018
  - **ACM grant** for attending SIGMETRICS Conference. 2018

## PUBLICATIONS

### Journal Publications (Peer-reviewed):

- [1] Basar Kutukcu, **Sabur Baidya**, Anand Raghunathan, Sujit Dey. “*Contention Grading and Adaptive Model Selection for Machine Vision in Embedded Systems*”. ACM Transactions on Embedded Computing Systems (ACM TECS) 2021. (*under review*)
- [2] Yu-Jen Ku, **Sabur Baidya**, Sujit Dey. “*Renewable Energy-Aware Resource-Efficient Vehicular Edge Computing Systems*”. IEEE Transactions on Vehicular Technology (IEEE TVT) 2021. (*accepted*)
- [3] Yoshitomo Matsubara, Davide Callegaro, **Sabur Baidya**, Marco Levorato, Sameer Singh. “*Head Network Distillation: Splitting Distilled Deep Neural Networks for Resource-constrained Edge Computing Systems*”. IEEE Access 2020.
- [4] **Sabur Baidya**, Marco Levorato. “*Content-Aware Cognitive Interference Control for Urban IoT Systems*”. IEEE Transactions on Cognitive Communications and Networking, (IEEE TCCN) 2018.

### Conference Proceedings (Peer-reviewed):

- [5] Kun Suo, Junggab Son, Dazhao Cheng, Wei Chen, **Sabur Baidya**. “*Tackling Cold Start of Serverless Applications by Efficient and Adaptive Container Runtime Reusing*”. IEEE International Conference on Cluster (CLUSTER) 2021.

- [6] Basar Kutukcu, **Sabur Baidya**, Anand Raghunathan, Sujit Dey. “*Contention-aware Adaptive Model Selection for Machine Vision in Embedded Systems*”. IEEE International Conference on Artificial Intelligence Circuits and Systems (AICAS) 2021.
- [7] Kousalya Banka, Kun Suo, Yong Shi, **Sabur Baidya**. “*A Study of State-of-the-art Energy Saving on Edges*”. ACM Southeast Conference (ACMSE) 2021.
- [8] Kun Suo, Yong Shi, Ahyoung Lee, **Sabur Baidya**. “*Characterizing Networking Performance and Interrupt Overhead of Container Overlay Networks*”. ACM Southeast Conference (ACMSE) 2021.
- [9] **Sabur Baidya**, Yu-Jen Ku, Hengyu Zhao, Jishen Zhao, Sujit Dey. “*Vehicular and Edge Computing for Emerging Connected and Autonomous Vehicle Applications*”. 57th ACM/EDAC/IEEE Design Automation Conference (DAC), 2020.
- [10] Yu-Jen Ku, Sandalika Sapra, **Sabur Baidya**, Sujit Dey. “*State of Energy Prediction in Renewable Energy-driven Mobile Edge Computing using CNN-LSTM Networks*”. IEEE Green Energy and Smart Systems Conference (IGESSC), 2020.
- [11] **Sabur Baidya** and Marco Levorato. “*On the Feasibility of Infrastructure Assistance to Autonomous UAV Systems*”. 16th International Conference on Distributed Computing in Sensor Systems (DCOSS) 2020.
- [12] Davide Callegaro , **Sabur Baidya**, Marco Levorato. “*Dynamic Distributed Computing for Infrastructure-Assisted Autonomous UAVs*”. IEEE International Conference on Communications. IEEE ICC 2020.
- [13] **Sabur Baidya**, Peyman Tehrani and Marco Levorato. “*Data-Driven Path Selection for Real-Time Video Streaming at the Network Edge*”. IEEE ICC Workshop on Edge Machine Learning for 5G Networks and Beyond, 2020.
- [14] Yoshitomo Matsubara, **Sabur Baidya**, Davide Callegaro, Marco Levorato, Sameer Singh. “*Distilled Split Deep Neural Networks for Edge-Assisted Real-Time Systems*”. ACM MobiCom Workshop on HotEdgeVideo, 2019.
- [15] Davide Callegaro , **Sabur Baidya**, Gowri Sankar Ramachandran, Bhaskar Krishnamachari, Marco Levorato. “*Information Autonomy: Self-Adaptive Information Management for Infrastructure-Assisted Autonomous UAV Systems*”. IEEE Military Communications Conference (MILCOM), 2019.
- [16] Davide Callegaro , **Sabur Baidya**, Marco Levorato. “*A Measurement Study on Edge Computing for Autonomous UAVs*”. ACM SIGCOMM Workshop on MAGESys, 2019.
- [17] **Sabur Baidya**, Zoheb Shaikh, Marco Levorato. “*FlyNetSim: An Open Source Synchronized UAV Network Simulator based on ns-3 and Ardupilot*”. 21st ACM International Conference on Modeling, Analysis and Simulation of Wireless and Mobile Systems (ACM MSWiM), 2018.
- [18] Zoheb Shaikh, **Sabur Baidya**, Marco Levorato. “*Robust Multi-Path Communications for UAVs in the Urban IoT*”. IEEE SECON Workshop on CPC-UAV 2018.
- [19] **Sabur Baidya**, Yan Chen and Marco Levorato. “*eBPF-based Content and Computation-aware Communication for Real-time Edge Computing*”. IEEE INFOCOM WKSHP, 2018.
- [20] **Sabur Baidya**, Marco Levorato. “*Edge-assisted Content and Computation-Driven Dynamic Network Selection for Real-Time Services in the Urban IoT*”. IEEE INFOCOM WKSHP, 2017.

- [21] **Sabur Baidya**, Marco Levorato. “*Content-Based Interference Management for Video Transmission in D2D Communications Underlying LTE*”. IEEE International Conference on Computing, Networking and Communications (ICNC), 2017.
- [22] **Sabur Baidya**, Marco Levorato. “*Content-based Cognitive Interference Control for City Monitoring Applications in the Urban IoT*”. IEEE Global Communications Conference (GLOBECOM), 2016.
- [23] **Sabur Baidya**, Ravi Prakash. “*Improving the performance of Multipath TCP over Heterogeneous Paths using Slow Path Adaptation*”. IEEE International Conference on Communications (ICC), 2014.

### Book Chapter, Abstracts & Technical Reports:

- [24] Yoshitomo Matsubara, **Sabur Baidya**, Davide Callegaro, Marco Levorato and Sameer Singh ”*Distilled Split Deep Neural Networks for Edge-Assisted Real-Time Systems.*” In Southern California Machine Learning Symposium (SCMLS), 2020.
- [25] A. Chowdhery, M. Levorato, I. Burago and **S. Baidya**, *Book Chapter: “Urban IoT Edge Analytics”* in Fog Computing in the Internet of Things (Intelligence at the Edge), Springer International Publishing, in press 2018. 101-120
- [26] **Sabur Baidya**, Pramod Shirol, Abhishek Basu, Ravi Prakash. “*Employing WiFi Direct to Build a Wireless Network over both 2.4 GHz and 5.8 GHz bands*”. Technical Report UTDCS-16-13, Computer Science Department, University of Texas at Dallas, Richardson, Texas, Sept. 2013.

### SELECTED POSTERS

- [1] **Sabur Baidya**, Yu-Jen Ku, Henry Zhao, Jishen Zhao and Sujit Dey. “*Vehicular and Edge Computing for Emerging Connected and Autonomous Vehicle Applications*” at CWC Research Review, UC San Diego, CA (May. 2020).
- [2] D. Callegaro, **S. Baidya**, Y. Matsubara, M. Levorato, G. Ramachandran and B. Krishnamachari. “*Resilient Communication and Computation for Heterogeneous Infrastructure-Assisted UAV Swarms*”, Beyond 5G SDR Showcase, Air Force Research Lab (AFRL), Wright Brother Institute, Dayton, OH (May. 2019).
- [3] **Sabur Baidya**, Yan Chen. “*eBPF Filtering and Packet Processing in Virtual Network Environment*” at Intern Research Showcase, Huawei Research Lab, CA (Aug. 2016). [ [3rd Best Poster Award](#) ]
- [4] **Sabur Baidya**, Marco Levorato. “*Content-based Cognitive Interference Control for City Monitoring Applications in the Urban IoT*” at Computer Science Research Showcase., UC Irvine (Jun. 2016). [ [Best Poster Award](#) ]
- [5] **Sabur Baidya**, Kai Su, Kiran Nagaraja, Ivan Seskar, Dipankar Raychaudhuri. “*Multihoming in Mobility First Future Internet Architecture*” at WINLAB Summer Research Program Open House, Rutgers University (Aug. 2012).

### SOFTWARE RELEASE

- FlyNetSim** <https://github.com/saburhb/FlyNetSim>
  - An open source synchronized UAV-Network simulator using ns-3 and Ardupilot.
  - It can simulate multi-UAVs, multiple Wireless Networks and IoT applications.
- eBPF-cast** <https://github.com/saburhb/eBPF-cast>
  - An open source software for real-time Network Function Virtualization (NFV), created using extended Berkeley Packet Filter (eBPF) of Linux Kernel.

## SELECTED TALKS

- 02/2021 : *Adaptive Computation Partitioning and Offloading in Sustainable Vehicular Edge Computing*, Computer Science Seminar, **University of Louisville (UofL)**
- 06/2020 : *On the Feasibility of Infrastructure Assistance to Autonomous UAV Systems*, International Conference on Distributed Computing in Sensor Systems (**DCOSS 2020**)
- 06/2020 : *Data-Driven Path Selection for Real-Time Video Streaming at the Network Edge*, IEEE International Conference on Communications (**IEEE ICC 2020**)
- 03/2020 : *Adaptive Computing & Communications for Intelligent and Autonomous Systems in the Internet-of-Things*, **University of Louisville (UofL)**
- 03/2019 : *Adaptive Communications for Intelligent & Autonomous Systems*, **University of Southern California (USC)**
- 04/2018 : *Robust Multi-Path Communications for UAVs in the Urban IoT*, AGS Symposium, University of California Irvine (**UCI**)
- 04/2018 : *eBPF-based Content and Computation-aware Communication for Real-time Edge Computing*, **IEEE INFOCOM 2018**, Honolulu, HI
- 12/2016 : *Content-based Cognitive Interference Control for City Monitoring Applications in the Urban IoT*, **IEEE GLOBECOM 2016**, Washington DC
- 08/2016 : *eBPF Filtering and Packet Processing in Virtual Network Environment*, **Huawei Research Labs**, Santa Clara, CA
- 06/2016 : *Content-based Cognitive Interference Control for City Monitoring Applications*, Graduate Research Showcase, University of California, Irvine (**UCI**)
- 06/2014 : *Improving the performance of MPTCP using Slow Path Adaptation*, IEEE International Conference on Communications (**IEEE ICC 2014**), Sydney Australia
- 12/2013 : *Information-Centric Networking*, **Cisco Systems**, San Jose, CA
- 08/2012 : *Multihoming in Mobility First Future Internet Architecture*, **WINLAB, Rutgers University**, North Brunswick, NJ

## RESEARCH IN NEWS

- **PC Magazine:** S.C. Stuart, [Inside the DARPA's Hackfest at the NASA Research Park](#). Dec.'17
- The Official US Defense Department Science Blog. [Armed with Science: DARPA Puts Techies to the Test at Bay Area Hackfest](#). Nov.'17
- UCI News. [Levorato and DeepEdge tackle DARPA SDR Hackfest](#) Dec.'17
- USC Viterbi News. [CCI Team Participates in DARPA SDR Hackfest](#) Nov.'17

## TEACHING

### University of Louisville

## EXPERIENCE

- Internet of Things: From Technology to Applications (CSE 590) - Special Topics Fall '21

### University of California, Irvine

- Guest lecture on Queuing Theory in Computer Communications & Networks course (CS 232) - Graduate level Fall '15
- Guest tutorial lecture on Networks Simulator NS-3 for Wireless Networks course (Graduate level) W'16, Sp'17, Sp'18

## STUDENT MENTORING

### **Current Students (UofL):**

- Mohammad Helal Uddin (PhD, CSE, UofL)

### **Current Students (UCSD) - External Mentoring:**

- Basar Kutukcu (PhD, ECE, UCSD)
- Yujen Ku (PhD, ECE, UCSD)
- Bryse Flowers (PhD, ECE, UCSD)

### **Past Students:**

- Sandalika Sapra, (MS, ECE, UCSD)
- Runfa Li, (MS, ECE, UCSD)
- Marve Kilic, (BS, ECE, UCSD)
- Zijia Guo, (BS, ECE, UCSD)
- Yaocong Hu, (BS, ECE, UCSD)
- Zoheb Shaikh, (MS, CS, UCI)
- Jatin Mehta, (MS, CS, UCI)
- Beichen Yang, (MS, CS, UCI)

## PROFESSIONAL SERVICES

- Committee:**
- TPC Member for COMSNETS 2022 Graduate forum
  - TPC Member for COMSNETS 2021 Graduate forum
  - TPC Member, 18th ACM Conference on Embedded Networked Sensor Systems (SenSys 2020), Posters/Demos
  - TPC Member for IEEE ICNC 2017
  - Student Organizer for Campus visit event for incoming PhD students, Computer Science department, UCI, 2018
  - External Relations Committee IEEE-UCI 2016

- Reviewer:**
- **Reviewer for Journals:**
    - IEEE Open Journal of the Communications Society (OJ-COMS)
    - IEEE Consumer Electronics Magazine
    - ACM Computing Surveys
    - IEEE Transactions of Cognitive Comm. & Networking (IEEE TCCN)
    - IEEE Access
  - **Reviewer for Conferences:**
    - IEEE International Conference on Robotics and Automation (ICRA)
    - IEEE International Conference on Sensing, Communication and Networking (SECON)
    - IEEE International Conference on Computing, Networking and Communication (ICNC)
    - IEEE International Symposium on Personal, Indoor and Mobile Radio Communications (PIMRC)

- IEEE Wireless Communications and Networking Conference (WCNC)
- ACM International Conference on Modeling, Analysis and Simulation of Wireless and Mobile Systems (MSWIM)
- IEEE International Conference on Communication Systems Networks (COMSNETS)
- ACM Conference on Embedded Networked Sensor Systems (SenSys)

**Volunteer:**

- **Student Volunteer**, IEEE SECON Conference 2017, San Diego, CA
- **Student Speaker**, Workshop on “Understanding the U.S. Classroom as a Student and Teaching Assistant” at GRC, UC Irvine (Oct. 22, 2015)

**Member:**

- Peer mentor, Graduate Resource Center, University of California, Irvine
- Member, Golden Key International Honour Society
- Member, IEEE
- Member, IEEE Communication Society.
- Member, Association of Computing Machinery (ACM)

## REFERENCES

**Dr. Sujit Dey**

Professor, Director of CWC & IGE  
 Dept. of Electrical & Computer Engg.  
 University of California, San Diego  
 Email: [dey@ece.ucsd.edu](mailto:dey@ece.ucsd.edu)  
 Phone: (858)-761-7518  
 Web: <http://mesdat.ucsd.edu/sujit-dey>

**Dr. Bhaskar Krishnamachari**

Professor, Ming Hsieh Faculty Fellow  
 Department of Electrical Engineering  
 University of Southern California  
 Email: [bkrishna@usc.edu](mailto:bkrishna@usc.edu)  
 Phone: (213)-821-2528  
 Web: <http://ceng.usc.edu/~bkrishna>

**Dr. Marco Levorato**

Associate Professor,  
 Dept. of Computer Science  
 University of California, Irvine  
 Email: [levorato@uci.edu](mailto:levorato@uci.edu)  
 Phone: (949) 824-2175  
 Web: <http://www.ics.uci.edu/~mlevatorat>

**Dr. Ravi Prakash**

Professor, Dept. of Computer Science  
 University of Texas at Dallas  
 Email: [ravip@utdallas.edu](mailto:ravip@utdallas.edu)  
 Phone: (972) 883-2289  
 Web: <http://www.utdallas.edu/~ravip>