

Curriculum Vitae

Computer Science, Georgia State University
25 Park Place, Suite 734
Atlanta, GA 30301

Cell Phone: (404) 413-6657
E-mail: aashok@gsu.edu
Homepage: <http://ashwinashok.com>

Name: Ashwin Ashok

Rank: Assistant Professor

Department: Computer Science

College of Arts and Sciences

Georgia State University

I. EDUCATION

Electrical and Computer Engineering, Rutgers University/WINLAB, NJ, USA
Ph.D., Electrical and Computer Engineering, Rutgers University **Oct 2014**
Thesis: Design, Modeling and Analysis of Visual MIMO Communication
Advisors: Profs. Marco Gruteser (primary), Narayan Mandayam and Kristin Dana

Electrical and Computer Engineering, Texas A&M University, TX, USA
M.S., Electrical Engineering, Texas A&M University, **Aug 2008**
Thesis: Synchronization in TDMA Based MANETs

National Institute of Technology–Warangal, India
B.Tech., Electronics and Communication Engineering **June 2006**

II. PROFESSIONAL CREDENTIALS

CMU-GM Connected and Autonomous Driving Collaborative Research Lab (CAD-CRL), Carnegie Mellon University, Pittsburgh, PA, USA **Oct 2014-Aug 2016**
Postdoctoral Research Associate

Mentor: Prof. Peter Steenkiste

Designed distributed computing systems to offer cloud-computing services to vehicular applications. System design for offloading computation from vehicle on-board units to cloud to enable autonomous driving applications and services.

QualComm, NJRC, Bridgewater, NJ, USA **Jun 2013-Aug 2013**
Systems Research Intern

Manager: Dr. Aleksandar Jovicic Worked with a team that built a camera based positioning system for robots fitted with a smartphone. Designed the positioning algorithm that used light references and camera images, and developed an indoor positioning application on Android smartphone.

WINLAB, Rutgers University, NJ, USA **Jun 2009-2014**
Graduate Research Assistant

Conducted research on doctoral thesis research work on a novel concept called Visual MIMO

that proposes to use photoreceptive arrays and cameras as communication receivers for information received from light emitting transmitter arrays. Also conducted collaborative work with other faculty on wearable computing, localization and capacitive touch communication.

Center for Excellence in Battlefield Communication, Texas A&M University, TX
Research Assistant **Jan 2007-Aug 2008**

- Theoretical design of a distributed synchronization method for battlefield-type Mobile Ad-Hoc Networks (MANET). Conducted analytical study of time synchronization in TD/CDMA based MANETs.

Analog Devices DSP Learning Center, IIT-Madras, India
Student Trainee **Summer 2005**

- Implementation of DSP applications: Implemented algorithms for image restoration, optical character recognition, G.711 speech coder, and baseband clock recovery on Analog Devices Blackfin 533 DSP processor.

III. SCHOLARSHIP AND PROFESSIONAL DEVELOPMENT

HONORS & AWARDS

- Best Poster Award, GSU CS Poster/Demo Day **2018**
- Best Poster runner-up, GSURC **2017**
- Best Paper Award Honorable Mention, ACM SenSys **2017**
- Best Paper Award, ACM MobiCom S3 Workshop **2017**
- Best In-session Presentation Award, IEEE INFOCOM **2016**
- Rutgers ECE Research Excellence Award (Travel Grant) **2014**
- NSF Student Travel Grant (SECON'10, MobiCom'11, MobiSys'13, CPS Week'14) **2010–2014**
- InterDigital Innovation Challenge Finalist **2012**
- Teaching Assistant of the Year Award, Dept. of ECE, Rutgers University **2010**
- Pratibha Scholarship for UG Education, State Ministry of Andhra, India **2002-2006**

RESEARCH GRANTS

- **NSF CNS NeTS CRII:** (sole PI funded: \$174595) **Aug 2018– Jul 2020**
Towards Ultra-High-Speed Mobile Visible Light Communication
- **NSF CNS NeTS:**(sole PI funded: \$25000) **Aug 2018– Jul 2020**
NSF Student Travel Grant for IEEE Vehicular Networking Conference (VNC) 2018
- **IEEE Robotics and Automation Society (RAS) SIGHT Grant:** (sole PI funded: \$2500) **July 2018– July 2019**
Underwater Robot for Water Quality Monitoring in Pipelines

- **Georgia State University Research Initiation Grant:** (sole PI funded: \$18,896)
Jul 2017– Jun 2018
IoTtoSee: Augmented Vision for the Visually Impaired through Cognitive Internet-of-Things
- **Microsoft Azure for Research: IoT** (sole PI funded: \$5000 in Azure cloud credits)
Jan 2017– Jan 2018
AzzurInSight: Augmented Vision for the Visually Impaired through Cognitive Cloud Computing
- **NVIDIA GPU Grant** (sole PI) **Jan 2017**
Awarded a JETSON TX2 GPU Development Kit for research towards automated drone assistive technology development
- **NSF–NeTS Computer and Network Systems** (funded: CNS–1065463, \$685,000)
2011–2015
Visual MIMO Networks
Assisted as student co–author on the research proposal towards funding

NOVEL RESEARCH OUTREACH ACTIVITIES

- **NSF Extreme Wireless Visioning Workshop** (Invited panel talk) **Oct 2017**
Drones: Mobile Base-Station in Air <https://goo.gl/AK6B3M>
- **Mobile-Health Training Institute** (35/370 selected nationwide) **Aug 2017**
<https://mhealth.md2k.org/mhealth-training-institute>
- **NSF NeTS Early Career Workshop** (research presentation) **Jun 2017**
Towards Ultra-High Speed Mobile Visible Light Communication
- **NSF NeTS Early Career Workshop** (research presentation) **Jun 2015**
Emerging Technologies in Cyber–Physical Systems: Vehicular Cloud Computing

TALKS & PRESENTATIONS (Invited in Bold Font)

- **A Novel Architecture for Ultra-High Speed Visible Light Communication**
Research talk at IEEE/ACM COMSNETS, India (Jan 2019)
- **Mobility Characterization for Vehicular Visible Light Communication**
Research talk at ITS Workshop in IEEE/ACM COMSNETS, India (Jan 2019)
- **Experiential Research at the GSU MORSE Studio**
Seminar talk in Dept. of Computer Science at National Taiwan University, Taiwan (Dec 2018)
- **Ph.D. Qualifier Bootcamp**
Seminar talk in Dept. of CS at Georgia State University (Aug 2018)
- **Mobile and Robotics Systems Research at GSU**
Seminar talk at ACM Student Chapter at Georgia State University (Sep 2018)

- **IoT and Robotics Research in Mobile CyberPhysical Systems at GSU**
Seminar talk at ACM Student Chapter at Georgia State University (Sep 2017)
- **Adaptive Cloud Offloading for Vehicular Applications**
Conference paper presentation at IEEE Vehicular Networking Conference (Dec 2016)
- **Emerging Mobile Cyber–Physical Systems**
Invited talks at Indian Institute of Sciences (IISc) Bangalore, IIT Bombay, IIT Madras, IIIT Hyderabad, PESIT Bangalore (India) (Sep–Oct 2016)
- **Emerging Cyber–Physical Systems: A Closer look at Camera Communications and Vehicular Cloud Computing**
Seminar talks at UC Santa Cruz, Portland State University, Georgia State University. (Feb–Apr 2016)
- *Automobile Cloud Services.*
CMU–GM CRL Research Review Meeting, Oct 2015 (previous: Nov 2014, May 2015)
- *Reliable Screen–Camera Communication through Visual MIMO (Invited).*
Dept. of ECE Seminar, Boston University (Sep 2015)
- **Low–Power Radio–Optical Beacons for In-View Recognition**
IEEE Vehicular Technology Conference (VTC–Fall), (Sep 2015)
- *Emerging Technologies in Cyber–Physical Systems: Vehicular Cloud Computing*
NSF NeTS Early Career Investigators Workshop, (July 2015)
- **Camera based optical wireless using visual MIMO**
Dept. of ECE Seminar Series, Stevens Institute of Technology, Hoboken, New Jersey, (Oct 2013)
- *Robot Positioning Using Lumicast*
Intern presentation, Qualcomm NJRD, Bridgewater, New Jersey, (Aug 2013)
- **Camera based optical wireless using Visual MIMO**
QualComm NJRD, Bridgewater, New Jersey, (July 2013)
- *BiFocus: A Radio–Optical Beaconing Approach for Augmented Reality*
ACM Mobisys, Elevator pitch and demo, Taipei, Taiwan, (June 2013)
- *Optical Wireless Communication Technologies: Visible Light Communication (VLC) and Visual MIMO (Invited Talk).*
Wireless Communication Systems Lecture, Piscataway, NJ, USA, (Apr 2012)
- **Camera Based Communication Using Visual MIMO**
Ph.D. forum Mobicom S3 Workshop, Las-Vegas, NV, USA, (Sep 2011)
- *Capacity of Camera Sensor Based Communications Under Perspective Distortions.*
WINLAB Industrial Advisory Board Meeting, Piscataway, NJ, (Dec 2011)
- *Rate Adaptation in Visual MIMO.*
IEEE SECON, Salt–Lake City, Utah, (Jun 2011)
- *Visual MIMO Based LED–Camera Communication for Automobile Safety.*
ACM Mobisys, Bethesda, Washington–DC, (Jun 2011)
- *Rate Adaptation in Visual MIMO.*
WINLAB Industrial Advisory Board Meeting, Piscataway, NJ, (May 2011)
- *Characterizing Multiplexing and Diversity in Visual MIMO.*
IEEE CISS, Baltimore, Maryland, (Mar 2011)

- *Challenge: Mobile Optical Networks through Visual MIMO.*
WINLAB Student Seminar Series, North-Bruswick, NJ, (Aug 2010)

IV. TEACHING AND ADVISING

TEACHING EXPERIENCE

Dept. of CS, Georgia State University, Atlanta, USA **Spring 2017–present**
Assistant Professor

- **Advanced Computer Vision**
- **Introduction to Computer Vision**
- **Introduction to Robotics**
- **Course Based Undergraduate Research Experience (CURE) on IoT**
- **Computer Architecture**

Dept. of ECE, Rutgers University, NJ, USA **Sep 2009–Aug 2011**
Graduate Teaching Assistant

- **Linear Systems.** *Supervised by Prof. Sophocles Orfanidis (Fall 2009), Prof. Zoran Gajic (Fall 2010)*
Prepared and delivered weekly 3hr lab sessions for sections with the total of 50 students. Designed and graded lab-quiz, homework and held regular office hours.
- **Probability and Random Processes.** *Supervised by Prof. Roy Yates (Spring 2010, 2011)*
Prepared and delivered weekly recitations for two sections with a total of 160 students. Designed and graded weekly quiz, homework and held regular office hours

Wireless Communications Systems, Rutgers University, NJ, USA **March 2013**
Guest lecturer on Visible–Light and Camera Communications
Instructor: Prof. Narayan Mandayam,

MENTORING EXPERIENCE

- Georgia State University (P: doctoral., M: masters., U: undergrad)
 - P: Ravishankar Chamaraajagar (post qualifier Ph.D. candidate, Expected: Fall 2019)
 - P: Khadija Ashraf (post qualifier Ph.D. candidate in CS)
 - P: Rasheed Rahman (post qualifier Ph.D. candidate in CS)
 - P: Towhidul Islam (post qualifier Ph.D. candidate in CS)
 - M: Zahra Tayebi (M.S. thesis candidate in CS)
 - M: Bezawit Woldegabriel (M.S. project candidate in CS)
 - M: Yashaswini Vishwanath (M.S. candidate in CS)
 - M: Akram Sadat Hosseini (M.S. candidate in CS)
 - M: Pavan Agnihotri (co-advised M.S. project in CS at GSU, currently at NCR)
 - U: Nishant Sinha (Presidential Scholar, pursuing Honors thesis with me)
 - U: Braxton McLean (R&D UAP UG in CS)

- U: Fabian Kim (UG Independent Research in CS)
- U: Kevin Aiken (UG Independent Research in CS)
- U: Abdirahman Mohammad (CURE UG research in CS)
- U: Joshua King (CURE UG research in CS, currently in a startup)
- U: John Creech (CURE UG research in CS, currently in a startup)
- U: Pranathi Venigandhla (CURE UG research in CS)
- U: Paul Hansa (CURE UG research in CS)
- U: MacDonny Saintill (CURE UG research in CS)
- U: Mounica Datla (UG Independent Research in CS at GSU)
- External Committees
 - P: Phuc Nguyen (Ph.D. candidate at Univ. Colorado Boulder)
 - P: Nam Bui (Ph.D. candidate at Univ. of Colorado Boulder)
 - P: Tran Huy Vu (Ph.D. candidate at Singapore Management University)
- Past (as doctoral (Rutgers) and post-doctoral (CMU) researcher)
 - Sugang Li (Ph.D. candidate at Rutgers) *Authentication using Head Movement*
 - Viet Nguyen (Ph.D. candidate at Rutgers) *Screen-Camera Communication*
 - Yaqin Tang (Ph.D. candidate at Rutgers) *Screen-Camera Communication*
 - Shubham Jain (Ph.D. Rutgers, now Asst. Prof. at ODU) *Visual MIMO systems*
 - Philip Chan (currently M.S. at UCSB) *Radio-Optical positioning hardware*
 - Michael Varga (currently at AMD, USA) *Vehicular Visual MIMO*
 - Woncheol Jeong (currently in CS UG at Stanford) *Screen-camera communication*
 - Jun Park (currently in CS UG program at Rutgers) *Android heads-up display UI design*

V. SERVICE

UNIVERSITY, COLLEGE AND DEPARTMENT

- GSU Next Generation Faculty proposal, Digital Health, co-Lead, 2019
- GSU Presidential Scholarship Day Interviewer, 2017-present
- GSU Undergraduate Research Competition (GSURC) Poster Judge, 2017-present
- GSU Mobile Health Consortium, co-founder and coordinator, 2018-present
- GSU ACM Student Chapter Faculty Coordinator, 2017-present
- CAS Dean's Strategic Planning Working Group (Cities) member, 2017
- CS Dept. Faculty Search Committee, CPS Track, 2017
- CS Dept. Bi-Annual Poster/Demo Day, founder and committee member, 2018-present
- CS Dept. Publicity Committee member (Slack and Media repository) 2017-present
- CS Dept. Undergraduate Committee member 2017-present
- CS Dept. Graduate Applications Committee member 2018-present

PROFESSIONAL COMMUNITY

- **National Science Foundation (NSF)**: Panelist 2019/2018/2017/2016/2015; Adhoc reviewer 2018
- **Editor**: Elsevier Vehicular Communications, 2019-present

- **Guest Editor:** MDPI Electronics Special Issue on Visible Light and Camera Communications 2019, IEEE Network Magazine Special Issue on Deep Learning and Networks 2018, IET-Wireless Sensing Systems (WSS) Journal Special Issue on Vehicular Networks, 2017
- **Chair:** IEEE GREENCOM TPC chair 2019, IEEE Vehicular Networking Conference Publicity Chair (2017), Poster, Demo and Student Travel Grants Chair (2018), Workshop co-chair for ACM International Conference on Mobile Computing and Networking (MobiCom) 2016, Founder and co-chair for ACM Workshop on Wearable Systems and Applications (WearSys) 2015/2016/2017
- **Technical Program Committee (select):** ACM Vehicular Networking Conference (VNC) 2016/2017, International Conference on Big Data Computing and Communications (BIGCOM) 2016, ACM International Conference on Mobile Systems, Applications and Services (MobiSys) (external TPC) 2015, International Workshop on Internet-of-Things towards Applications (IoT-App) 2015, IEEE International Conference on Communication Systems and Networks (COMSNETS) 2015
- **Session Chair:** IEEE VNC 2018 *Experimentation and Systems Part 2*, 2016: *Visible Light Communication*, ACM MobiSys 2015: *Mobility and Networking*, IEEE VTC 2015: *Emerging Technologies: Light-based Communications and Positioning*
- **Panel Chair:** ACM Wearable Systems and Applications (WearSys) workshop, Jun 2015/2016/2017/2018, ACM Visible Light Communication Systems (VLCS) workshop, Oct 2017, ACM CarSys Workshop, Oct 2017.
- **Journal Reviewer:** IEEE Transactions on Mobile Computing (TMC), IEEE Transactions on Networking (TON), IEEE Transactions on Sensor Networks (TOSN), IEEE Transactions on Vehicular Technology (VT), Sigmobility Mobile Computing and Communications Review (MC2R), IEEE Wireless Communication Magazine, IEEE Communication Magazine, IEEE Network Magazine, IEEE Vehicular Technology Magazine (VTM), IEEE Intelligent Transport Systems Magazine (ITSM), Elsevier Vehicular Communications (VEHCOM), Elsevier Computer Communications (COMCOM), Elsevier's Ad Hoc Networks Journal, WINET (Journal on Wireless Networks), IEEE Access, MDPI Sensors, Electronics, MDPI Applied Sciences.
- **Professional Member:** ACM, Sigmobility, IEEE, IEEE-Robotics and Automation Society, IEEE Computer Society

VI. PUBLICATIONS (reverse chronological order)

[B] Book Chapter

1. *5G Cloud, Mobile and Edge Computing for IoT*
Ravishankar Chamarajnar, Ashwin Ashok
5G-enabled Internet-of-Things, CRC Press, Apr 2019

[J] Journal

1. *A Real-Time Smartphone-Based Blood Oxygen Saturation Measurement by Exploiting Wavelengths Separation And Red Chromophore Compensation.*
Nam Nui, Ann Nguyen, Phuc Nguyen, Hoang Truong, Ashwin Ashok, Thang Dinh, Robin Detering, Tam Vu

- IEEE Trans. on Sensor Networks (TOSN) (under minor revision review)**
2. *Vehicular Cloud Computing through Dynamic Computation Offloading*
Ashwin Ashok, Peter Steenkiste, Fan Bai
Elsevier COMCOM Special Issue on Best Papers of VNC'16, Dec 2017
 3. *What Am I Looking At? Low-Power Radio-Optical Beacons For In-View Recognition Using Smart-Glasses*
Ashwin Ashok, Chenren Xu, Tam Vu, Marco Gruteser, Richard Howard, Yanyong Zhang, Narayan Mandayam, Wenjia Yuan, Kristin Dana
IEEE Trans. on Mobile Computing (TMC), 2016
 4. *Capacity of Screen-Camera Communications Under Perspective Distortions*
Ashwin Ashok, Shubham Jain, Marco Gruteser, Narayan Mandayam, Wenjia Yuan, Kristin Dana
Elsevier Pervasive and Mobile Computing Journal (PMC), Dec 2014

[C] Conference and Workshop

1. *A Novel Architecture for Ultra-High Signal-to-Interference-Noise-Ratio in Visible Light Communication*
MD Rashed Rahman, SM Towhidul Islam, [Ashwin Ashok](#)
11th International Conference on Communications, Systems and Networks (COMSNETS), 2019
2. *Motion Characterization for Vehicular Visible Light Communication*
Khadija Ashraf, SM Towhidul Islam, Akram Sadat Hosseini, [Ashwin Ashok](#)
11th International Conference on Communications, Systems and Networks (COMSNETS) ITS Workshop, 2019
3. *TaxSeeMe: A Taxi Administering System for the Visually Impaired*
SM Towhidul Islam, Bezawit Woldegabriel, [Ashwin Ashok](#)
IEEE Vehicular Networking Conference (VNC) App Contest, 2018
4. *Opportunistic Mobile IoT with Blockchain Based Collaboration*
Ravishankar Chamrajnagar, [Ashwin Ashok](#)
IEEE Global Communication Conference (GLOBECOM), 2018
5. *Position: Drone Noise Reduction through Audio Waveguiding*
Abdirahma Mohammad, [Ashwin Ashok](#)
Fourth ACM Workshop on Micro Aerial Vehicle Networks, Systems, and Applications (DroNet), 2018
6. *Position: DroneVLC: Visible Light Communication for Aerial Vehicular Networking*
[Ashwin Ashok](#)
ACM Workshop on Visible Light Communication Systems (VLCS), 2017
7. *PhO2: Smartphone based Blood Oxygen Level Measurement Systems using Near-IR and RED Wave-guided Light*
Nam Bui, Ann Nguyen, Phuc Nguyen, Hoang Truong, [Ashwin Ashok](#), Thang Dinh, Robert Deterding, and Tam Vu
ACM Conference on Embedded Networked Sensor Systems (SenSys), 2017
8. *Battery-Free Identification Token for Touch Sensing Devices*
Phuc Nguyen, Ufuk Muncuk, [Ashwin Ashok](#), Kaushik Chowdhury, Marco Gruteser, Tam Vu
ACM Conference on Embedded Networked Sensor Systems (SenSys), 2016
9. *Adaptive Cloud Offloading for Vehicular Applications*
[Ashwin Ashok](#), Peter Steenkiste, Fan Bai
IEEE Vehicular Networking Conference (VNC), 2016
10. *High-Speed Mobile Networking Through Hybrid mmWave—Camera Communications*
Takayuki Nishio, [Ashwin Ashok](#)
ACM Workshop on Visible Light Communication Systems (VLCS), 2016.
11. *Whose Move is it Anyway? Authenticating Smart Wearable Devices Using Unique Head Movement Patterns*
Sugang Li, [Ashwin Ashok](#), Yanyong Zhang, Chenren Xu, Janne Lindqvist, Marco Gruteser
IEEE Conference on Pervasive Computing and Communications (PerCom), 2016.

12. *High-Rate Flicker-Free Screen-Camera Communication with Spatially Adaptive Embedding*
 Viet Nguyen, Yaqin Tang, [Ashwin Ashok](#), Marco Gruteser, Kristin Dana, Wenjun Hu, Eric Wengrowski, Narayan Mandayam
IEEE Conference on Computer Communications (INFOCOM), 2016
13. *Optimal Radiometric Calibration for Camera-Display Communication*
 Eric Wangowski, Wenjia Yuan, Kristin Dana, [Ashwin Ashok](#), Marco Gruteser, Narayan Mandayam
IEEE Conference on the Applications of Computer Vision (WACV), 2016
14. *Emerging Technologies in Cyber-Physical Systems: Vehicular Cloud Computing (Invited)*
[Ashwin Ashok](#)
NSF NeTS Early Career Investigators Workshop, 2015
15. *Enabling Vehicular Applications using Cloud Services through Adaptive Computation Offloading*
[Ashwin Ashok](#), Peter Steenkiste, Fan Bai
ACM Mobile Cloud Computing and Services Workshop (MCS), MobiCom, 2015
16. *Low-Power Radio-Optical Beacons for In-View Recognition (Invited)*
[Ashwin Ashok](#), Chenren Xu, Tam Vu, Marco Gruteser, Richard Howard, Yanyong Zhang, Narayan Mandayam, Wenjia Yuan, Kristin Dana
IEEE Vehicular Technology Conference (VTC-Fall), Emerging Technologies: Light-based Communications and Positioning Track, 2015
17. *A Realistic Evaluation and Comparison of Indoor Location Technologies: Experiences and Lessons Learned*
 Dimitrios Lymberopoulos, Jie Liu, Xue Yang, Romit Roy Choudhury, Vlado Handziski, Souvik Sen, and (participants of Microsoft Indoor localization Competition 2014 as co-authors)
 I lead Team 5 ([Ashwin Ashok](#), Chenren Xu): IR/Radio Time-of-Flight based localization
IEEE/ACM International Conference on Information Processing in Sensor Networks (IPSN), 2015
18. *Do Not Share! Invisible Light Beacons for Signaling Preferences to Privacy-Respecting Cameras*
[Ashwin Ashok](#), Viet Nguyen, Marco Gruteser, Narayan Mandayam, Wenjia Yuan, Kristin Dana
ACM Visible Light Communication Systems (VLCS) Workshop, MobiCom, 2014
19. *Capacity of Pervasive Camera Based Communication Under Perspective Distortion*
[Ashwin Ashok](#), Shubham Jain, Marco Gruteser, Narayan Mandayam, Wenjia Yuan, Kristin Dana
IEEE International Conference on Pervasive Computing and Communications (PerCom), 2014

20. *Phase Messaging Method for Time-of-flight Cameras*
Wenjia Yuan, Kristin Dana, [Ashwin Ashok](#), Rich Howard, Ramesh Raskar, Marco Gruteser, and Narayan Mandayam
IEEE International Conference on Computational Photography (ICCP), 2014
21. *Spatially Varying Radiometric Calibration For Camera-Display Messaging*
Wenjia Yuan, Kristin Dana, [Ashwin Ashok](#), Marco Gruteser, Narayan Mandayam
IEEE Global Conference on Signal and Image Processing (GlobalSIP), Symposium on Mobile Imaging, 2013
22. *Dynamic and Invisible Messaging for Visual MIMO*
Wenjia Yuan, Kristin Dana, [Ashwin Ashok](#), Marco Gruteser, Narayan Mandayam
IEEE Workshop on Applications In Computer Vision (WACV), 2012
23. *Computer Vision Methods for Visual MIMO Optical System*
Wenjia Yuan, Kristin Dana, [Ashwin Ashok](#), Marco Gruteser, Narayan Mandayam, Michael Varga
IEEE Computer Vision and Pattern Recognition (CVPR) Workshop, 2011
24. *Rate Adaptation in Visual MIMO*
[Ashwin Ashok](#), Marco Gruteser, Narayan Mandayam, Ted Kwon, Wenjia Yuan, Kristin Dana
IEEE International Conference on Sensing, Communication and Networking (SECON), 2011
25. *Characterizing Multiplexing and Diversity in Visual MIMO*
[Ashwin Ashok](#), Marco Gruteser, Narayan Mandayam, Kristin Dana
IEEE Conference on Information Sciences and Systems (CISS) 2011
26. *Challenge: Mobile Optical Networks Through Visual MIMO*
[Ashwin Ashok](#), Marco Gruteser, Narayan Mandayam, Jayant Silva, Michael Varga, Kristin Dana
ACM International Conference on Mobile Computing and Networking (MobiCom), 2010

[D] Poster and Demo

1. *Demo: Fusing Mobile Sensors for Paper Keyboard On-the-Go*
Ann Nguyen, Duy Nguyen, Nhan Nguyen, [Ashwin Ashok](#), Binh Nguyen, Bao Pam, Tam Vu
ACM Conference on Embedded Networked Sensor Systems (SenSys) Demos, 2017.
2. *Demo of HeadBanger: Authenticating Smart Wearable Devices Using Unique Head Movement Patterns*
Sugang Li, [Ashwin Ashok](#), Yanyong Zhang, Chenren Xu, Janne Lindqvist, Marco Gruteser
IEEE Conference on Pervasive Computing and Communications (PerCom) Demos, 2016.

3. *Demo: BiFocus–Using Radio-Optical Beacons for An Augmented Reality Search Application*
Ashwin Ashok, Chenren Xu, Tam Vu, Marco Gruteser, Richard Howard, Yanyong Zhang, Narayan Mandayam, Wenjia Yuan, Kristin Dana
ACM International Conference on Mobile Systems, Applications and Services (MobiSys), 2013
4. *Photometric Modeling for Active Scenes*
Wenjia Yuan, Kristin Dana, Ashwin Ashok, Marco Gruteser, Narayan Mandayam
IEEE Workshop on Computational Cameras and Displays, Poster Presentation, Conference on Computer Vision and Pattern Recognition (CVPR), 2013
5. *Demo: User Identification and Authentication with Capacitive Touch Communication*
Tam Vu, Ashwin Ashok, Akash Baid, Marco Gruteser, Jeffrey Walling, Predrag Spasojevic, Richard Howard
ACM International Conference on Mobile Systems, Applications and Services (MobiSys), 2012
6. *Demo: Visual MIMO based LED–camera communication Applied to Automobile Safety*
Michael Varga, Ashwin Ashok (co-primary), Marco Gruteser, Narayan Mandayam, Wenjia Yuan, Kristin Dana
ACM International Conference on Mobile Systems, Applications and Services (MobiSys), 2011

[O] Others (Technical reports, Arxiv etc.)

1. *Optimal Radiometric Calibration for Camera–Display Communication*
Wenjia Yuan, Eric Wangowski, Kristin Dana, Ashwin Ashok, Marco Gruteser, Narayan Mandayam
arXiv:1501.01744 [cs.CV]

[T] Thesis *Design, Modeling and Analysis of Visual MIMO Communication*

Doctoral Dissertation, Electrical and Computer Engineering, Rutgers University

Ashwin Ashok, Marco O Gruteser (chair), Narayan B Mandayam (co–chair), Kristin J Dana (co–chair), Thomas D Little (outside member)

<https://rucore.libraries.rutgers.edu/rutgers-lib/45185/>