Phuc "VP" Nguyen, Ph.D.

CONTACT
INFORMATION

Assistant Professor
Director, Wireless and Sensor Systems Lab
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RESEARCH
INTERESTS

Primary: Cyber-Physical Systems, Mobile Health Sensing, Mobile System Security.
Secondary: Algorithms, Artificial Intelligence, Operating Systems.

EDUCATION

University of Colorado Boulder, CO, USA.
   Ph.D., Computer Science.

- Advisor: Prof. Tam Vu.
- Graduation year: 2018.

Sungkyunkwan University (SKKU), Suwon, South Korea.
   M.S., Electrical and Computer Engineering.

- Advisor: Prof. Hyunsung Choo.
- Graduation year: 2014.

Vietnam National University, University of Science, Ho Chi Minh city, Vietnam.
   B.S., Electronics and Telecommunications.
- Advisor: Dr. Bui Huu Phu.
- Graduation year: 2010.

APPOINTMENTS

- **University of Texas at Arlington**, Arlington, Texas, USA **2020 - present**
  Assistant Professor of Computer Science and Engineering
  Director, Wireless and Sensor Systems Lab
- **University of Colorado Boulder**, Boulder, CO, USA **2019 - 2020**
  Computer Science Research Scientist
- **University of Colorado Boulder**, Boulder, CO, USA **2014 - 2018**
  Graduate Research Assistant
- **Sungkyunkwan University**, Suwon, South Korea **2014**
  Electrical and Computer Engineering Researcher
- **Samsung Electronics**, HCM City, Vietnam **2010-2012**
  Mobile Engineer

AWARDS

- SONY Faculty Innovation Award **2021**
- CACM Research Highlights **2020**
- ACM SIGMOBILE Research Highlights **2017, 2020**
- Best Paper Award, ACM MobiCom 2019 **2019**
- Best Paper Runner-up Award, ACM SenSys 2018 **2018**
- Best Paper Nominee, ACM SenSys 2017 **2017**
- 2nd prize ACM MobiCom App Contest **2017**
- Best Paper Award, ACM MobiCom-S3 2016-2017 **2016-2017**
- Best CS Dept. Senior Design Project Award 2017 **2017**
- Outstanding Graduate Student Award from CS Department **2016**
- College-wide Best Overall Senior Design Project Award 2016 **2016**
- Student Travel Grant Awards (ACM SenSys'16, ACM MobiSys'16, IEEE INFOCOM'16) **2016**
- Best Paper Presentation Award, KCC **2013**

- Best Paper Award, KSII **2012**
- 3rd prize of Mobile App Development Contest at Sungkyunkwan University **2012**

RESEARCH GRANTS AND PROPOSALS
- SONY Faculty Innovation Award, 2021. (funded: SONY Corporation of America, $100,000, 2021 - 2022). Sole PI.
- UTA IRP, From Data to Personalized Preventive Medicine: Leveraging Wearable Sensors to Promote Active Living in Women of Color with Obesity, (funded: UTA $20,000, 2021 - 2022). Co-PI.

PUBLICATIONS

■ *Mobile and Wearable Systems, Mobile Security and Wireless Security.*
- Peer Review Conferences and Journals:
  1. Detection of Microsleep Events with a Behind-the-ear Wearable System.
     Nhat Pham, Tuan Dinh, Taeho Kim, Zohreh Raghebi, Nam Bui, Hoang Truong, Tuan Nguyen, Farnoush Banaei-Kashani, Ann Halbower, Thang Dinh, **Phuc Nguyen**, Tam Vu, **IEEE TMC** - The IEEE Transactions on Mobile Computing (IF: 5.112, preprint).

  2. *JawSense*: Recognizing Unvoiced Sound using a Low-cost Ear-worn System
     Prerna Khanna, Tanmay Srivastava, Shijia Pan, Shubham Jain, **Phuc Nguyen**,
     ACM HotMobile'21 - The ACM Intl' Workshop on Mobile Comp. Systems & Applications.

  3. *DroneScale*: Drone Load Estimation Via Remote Passive RF Sensing
     Phuc Nguyen, Vimal Kakaraparthi, Nam Bui, Nikshep Umamahesh, Nhat Pham, H. Truong, Y. Guddeti, Dinesh Bharadia, Eric Frew, Richard Han, Daniel Massey, and Tam Vu
     ACM Sensys'20 - The ACM Intl' Conf. on Embedded Networked Sensor Systems.
     (*44 out of 213 submissions, acceptance ratio: 20.6%*)

  4. Epileptic Seizure Detection and Experimental Treatment: A Review.
     Taeho Kim, **Phuc Nguyen**, Nhat Pham, Nam Bui, Hoang Truong, Sangtae Ha and Tam Vu
     Frontiers in Neurology - Epilepsy 2020.

  5. *Painometry*: Wearable and Objective Quantification System for Acute Postoperative Pain.
     H. Truong, N. Bui, Z. Raghebi, M. Ceko, N. Pham, **P. Nguyen**, A. Nguyen, T. Kim, K. Siegfried, E. Stene, T. Tvrdy, L. Weinman, T. Payne, D. Burke, T. Dinh, S. D'Mello, F. Banaei-Kashani, T. Wager, P. Goldstein, and T. Vu
     ACM MobiSys'20 - The ACM Intl' Conf. on Mobile Systems, Applications and Services.
     (*34 out of 175 submissions, acceptance ratio: 19.4%*).

  6. *WAKE*: A Behind-the-ear Wearable System for Microsleep Detection Nhat Pham, Tuan Dinh, Zohreh Raghebi, Taeho Kim, Nam Bui, **Phuc Nguyen**, Hoang Truong, Farnoush Banaei-Kashani, Ann Halbower, Thang Dinh and Tam Vu
     ACM MobiSys'20 - The ACM Intl' Conf. on Mobile Systems, Applications and Services.
     (*34 out of 175 submissions, acceptance ratio: 19.4%*).

  7. *eBP*: A Wearable System For Frequent and Comfortable Blood Pressure Monitoring.
     Nam Bui, Nhat Pham, Jessica Barnitz, **Phuc Nguyen**, Hoang Truong, Taeho Kim, Anh Nguyen, Zhanan Zou, Nicholas Farrow, J. Xiao, Robin Deterding, Thang Dinh, Tam Vu.
     ACM MobiCom'19 - The ACM Intl' Conf. on Mobile Computing and Networking.
     (*30 out of 186 submissions, acceptance ratio: 16.1%*).
     CACM RESEARCH HIGHLIGHTS 2020
     BEST PAPER AWARD, ACM SIGMOBILE RESEARCH HIGHLIGHTS 2020.

  8. Smartphone-Based SpO2 Measurement by Exploiting Wavelengths Separation and Chromophore Compensation.
     Nam Bui, Anh Nguyen, **Phuc Nguyen**, Hoang Truong, Ashwin Ashok, Thang Dinh, Robin Deterding and Tam Vu.
     ACM TOSN'19 - ACM Transactions on Sensor Networks.

  9. *TYTH*-Typing On Your Teeth: Tongue-Teeth Localization for Human-Computer Interface.
     Phuc Nguyen, Nam Bui, Anh Nguyen, Hoang Truong, Abhijit Suresh, Matthew Whitlock,

Duy Pham, Thang Dinh, and Tam Vu.
ACM MobiSys'18 - The ACM Intl' Conf. on Mobile Systems, Applications and Services.
(*37 out of 138 submissions, acceptance ratio: 26.8%*).

10. *CapBand*: Battery-free Capacitance Sensing Wristband for Hand Gesture Recognition.
Hoang Truong, Shuo Zhang, Ufuk Muncuk, **Phuc Nguyen**, Nam Bui, Anh Nguyen, Qin Lv, Kaushik Chowdhury, Thang Dinh, and Tam Vu.
ACM Sensys'18 - The ACM Intl' Conf. on Embedded Networked Sensor Systems.
(*23 out of 147 submissions, acceptance ratio: 15.6%*)
BEST PAPER RUNNER-UP AWARD.

11. Body-Guided Comm.: A Low-power, Highly-Confined Primitive to Track and Secure Touch.
Viet Nguyen, Mohamed Ibrahim, Hoang Truong, **Phuc Nguyen**, Richard Howard, Marco Gruteser and Tam Vu.
ACM MobiCom'18 - The ACM Intl' Conf. on Mobile Computing and Networking.
(*47 out of 187 submissions, acceptance ratio: 22.5%*).

12. *Matthan*: Drone Presence Detection by Identifying Physical Signatures in the Drone's RF Communication.
Phuc Nguyen, Hoang Truong, Mahesh R., Anh Nguyen, Richard Han, Tam Vu.
ACM MobiSys'17 - The ACM Intl' Conf. on Mobile Systems, Applications and Services.
(*34 out of 188 submissions, acceptance ratio: 18%*).
ACM SIGMOBILE RESEARCH HIGHLIGHT AWARD.

13. *ParkSense*: Automatic Parking Positioning by Leveraging In-Vehicle Magnetic Field Variation. **Phuc Nguyen**, Hieu Nguyen, Dong Nguyen, Thang N. Dinh, Hung M. La, Tam Vu
IEEE Access'17 - The IEEE Access Journal.

14. Cost-Effective and Passive RF-Based Drone Presence Detection and Characterization.
Phuc Nguyen, Hoang Truong, Mahesh R., Anh Nguyen, Richard Han, and Tam Vu.
ACM GetMobile 2018.

15. Volumetric Reconstruction of Thermal-depth 3D Models for Occluded Posture Estimation.
Shane Transue, **Phuc Nguyen**, Tam Vu, Min-Hyung Choi.
Smart Health Journal 2018.

16. Thermal-Depth Fusion for Occluded Body Skeletal Posture Estimation."
Shane Transue, **Phuc Nguyen**, Tam Vu, Min-Hyung Choi.
ACM/IEEE CHASE'17 - The Intl' Conf. on Connected Health: App., Sys. and Eng.

17. PhO2: Optical 3D printed & light extraction techniques for blood oxygen measurement.
Nam Bui, Anh Nguyen, **Phuc Nguyen**, Hoang Truong, A. Ashok, Thang Dinh, Tam Vu.
ACM Sensys'17 - The ACM Intl' Conf. on Embedded Networked Sensor Systems.
(*26 out of 151 submissions, acceptance ratio: 17.2%*)
BEST PAPER NOMINEE,
2ND PRIZE @ ACM MOBICOM APP CONTEST 2017.

18. Battery-Free Identification Token for Touch Sensing Devices.
Phuc Nguyen, Ufuk Muncuk, A. Ashok, Kaushik Chowdhury, Marco Gruteser, Tam Vu.
ACM SenSys'16 - The ACM Intl' Conf. on Embedded Networked Sensor Systems.
(*21 out of 119 submissions, acceptance ratio: 17.6%*)
CS BEST SENIOR PROJECT AWARD 2017.

19. Continuous & Fine grained Breathing Volume Monitoring from Afar Using Wireless Signals.
Phuc Nguyen, Xinyu Zhang, Ann C. Halbower and Tam Vu.
IEEE INFOCOM'16 - The IEEE International Conference on Computer Communications.
(*300 out of 1644 submissions, acceptance ratio: 18.2%*).

20. Real-time Tidal Volume Estimation using Iso-surface Reconstruction.
Shane Transue, **Phuc Nguyen**, Tam Vu and Min-Hyung Choi.
IEEE CHASE'16 - The Intl' Conf. on Connected Health: App., Sys. and Eng. Technologies.

21. Through-body Capacitive Touch Communication.
Hoang Truong, **Phuc Nguyen**, Viet Nguyen, Mohamed Ibrahim, Richard Howard, Marco Gruteser, and Tam Vu.
ACM S3'17 - The ACM Intl' Conf. on Mobile Computing & Networking - S3 Workshop.

- Workshops, Posters and Demos:

1. Towards RF-based Localization of a Drone and Its Controller.
Phuc Nguyen, Taeho Kim, Jinpeng Miao, Daniel Hesselius, Erin Kenneally, Daniel Massey, Eric Frew, Richard Han and Tam Vu.
ACM MobiSys-DroNet'19 - Workshop on Micro Aerial Vehicle Networks, Systems, & Applications.

2. Capacitive sensing 3D-printed Wristband for Enriched Hand Gesture Recognition.
Hoang Truong, **Phuc Nguyen**, Anh Nguyen, Nam Bui and Tam Vu.
ACM MobiSys-WearSys'17 - The Workshop on Wearable Systems.
COLLEGE BEST SENIOR PROJECT AWARD 2016.

3. Photometry based Blood Oxygen Estimation through Smartphone Cameras.
Nam Bui, Anh Nguyen, **Phuc Nguyen**, Hoang Truong, A. Ashok, Thang Dinh, Tam Vu.
ACM S3'17 - The ACM International Conference on Mobile Comp. & Networking - S3.
BEST PAPER AWARD.

4. "WikiSpiro: Non-contact Respiration Volume Monitoring during Sleep"
Phuc Nguyen, Shane Transue, Ann C. Halbower, Min-Hyung Choi, Tam Vu
ACM S3'16 - The ACM International Conference on Mobile Comp. & Networking - S3.
BEST PAPER AWARD.

5. "Investigating Cost-effective RF-based Detection of Drones"
Phuc Nguyen, Mahesh R., Anh Nguyen, Richard Han, Tam Vu
ACM MobiSys-DroNet'16 - Workshop on Micro Aerial Vehicle Networks, Systems, & App.

6. "Continuous and Fine-grained Respiration Volume Monitoring Using Continuous Wave Radar"
Phuc Nguyen, Xinyu Zhang, Ann C. Halbower, Tam Vu
ACM MobiCom Poster'15 - The ACM Intl' Conf. on Mobile Computing and Networking.

7. "Mobile Device Identification by Leveraging Built-in Capacitive Signature"
Manh Huynh, **Phuc Nguyen**, Marco Gruteser, and Tam Vu
ACM CCS Poster'15 - The ACM Intl' Conf. on Computer and Communications Security.

■ *Wireless Sensor Networking.*

- Peer Review Conferences and Journals:

1. "Delay-Efficient Data Collection with Dynamic Traffic Patterns in Wireless Sensor Networks"
Phuc Nguyen, Vyacheslav Zalyubovskiy, and Hyunseung Choo
ICWN'13 - The International Conference on Wireless Networks.

2. "A Network Structure for Load-Balanced Clustering Data Aggregation in Duty-Cycled WSNs"
Phuc Nguyen, Sanggil Yeoum, Vyacheslav Zalyubovskiy, and Hyunseung Choo
KSII'13 - The Korean Society for Internet Information.

3. "Minimum Latency and Energy-Efficient Data Collection with Dynamic Traffic in WSNs"
Phuc Nguyen, Le Duc Thang, and Hyunseung Choo
KCC'13 - The Korea Computer Congress
BEST PAPER PRESENTATION AWARD.

4. "A Latency-aware Data Aggregation Scheduling in Duty-cycled Wireless Sensor Networks"
Khanh Ha Nguyen Phan, **Phuc Nguyen**, Minhan Shon, and Hyunseung Choo
KSII'12 - The Korean Society for Internet Information.
BEST PAPER AWARD.

PATENTS

1. Tam Vu, **Phuc Nguyen**, Ann C Halbower, "Continuous and Fine-grained Breathing Volume Monitoring from Afar Using Wireless Signals", App. No. 15/679,282, CU4003D-US1, 2017.

2. Tam Vu, Richard Han, **Phuc Nguyen**, Hoang Truong, Mahesh Kumar Ravindranathan, "Drone Presence Detection", App. No. 62/516,875, CU4333D-PPA1, 2017.

3. Tam Vu, Robin Deterding, Anh Nguyen, **Phuc Nguyen**, "Systems and Method for Determining Vital Information with a Computing Device", App. No. 62/410,299, CU4210D-PPA1, 2017.

4. Tam Vu, **Phuc Nguyen**, "Method and Apparatus for Battery-Free Identification Token for Touch Sensing Devices", App. No. 62/421,583, CU4203D-PPA1, 2016.

5. Tam Vu, **Phuc Nguyen**, "Method and apparatus for Two-factor Authentication in a Single Step using Wearables for Touch-enabled Devices", CU3943D-PPA1, 2016.

TEACHING
EXPERIENCE

■ *Department of Computer Science and Engineering, University of Colorado, USA.*

- Spring 2021: Algorithms and Data Structure
  (CSE 3318). Enrolled as an instructor
- Fall 2020: IoT and Mobile Computing and Fundamental of Wireless Networking
  (CSE-5349/4340). Enrolled as an instructor.
- Fall 2016: Hardware and Software Interfaces (CSCI-3511). Enrolled as an instructor.
- Spring 2016: Fundamentals of Computing Lab (CSCI-1411). Enrolled as an instructor.
- Fall 2015: Fundamentals of Computing Lab (CSCI-1411). Enrolled as an instructor.
- Spring 2015: Fundamentals of Computing Lab (CSCI-1411). Enrolled as an instructor.
- Fall 2014: Fundamentals of Computing Labs (CSCI-1411). Enrolled as an instructor.

PROFESSIONAL
SERVICES AND
ACTIVITIES

■ *Chair - Workshop and Organization*
- ACM Dronet 2021 (`http://wsslab.org/dronet21/`) **2021**
- ACM MobiCom S3 2017 (`http://mnslab.org/s3/`) **2017**

■ *Technical Program Committee*
- ACM MobiCom (`https://www.sigmobile.org/mobicom/2022/`) **2022**
- IEEE MSN (`https://ieee-msn.org/2021/index.php`) **2021**
- ACM SenSys (`https://sensys.acm.org/2021/`) **2021**
- ACM MobiSys (`https://www.sigmobile.org/mobisys/2021/tpc.html`) **2021**
- ACM SenSys/BuildSys Joint Doctoral Colloquium (`http://sensys.acm.org/2020/dc/`) **2020**
- ACM DroNet (`https://tinyurl.com/ycj8aap9`) **2020**
- ACM MobiSys PhD Forum (`https://tinyurl.com/y7re44tc`) **2018**
- ACM MobiCom S3 (`http://mnslab.org/s3/`) **2017**
- ACM FAILSAFE(`http://wp.doc.ic.ac.uk/failsafe/`) **2017**
- IEEE VTC(`http://www.ieeevtc.org/vtc2017spring/`) **2017**

■ *Reviewer Activities*
- ACM Interactive, Mobile, Wearable and Ubiquitous Technologies (IMWUT) **2019, 2021**
- ACM Transaction on Sensor Networks (TOSN) **2021**
- IEEE Transactions on Mobile Computing **2017 - 2019**
- IEEE Sensors **2019**
- IEEE Communications Magazine **2019**
- Elsevier Computer Networks **2020**

STUDENT
MENTORING

- Tuan Dang, Ph.D. student **2020-present**
- Tien Pham, Ph.D. student **2020-present**
- Abdul Aziz, Master Student **2021-present**
- Ajay Venkatesha, Master Student **2021-present**
- Nisarg Shah, Undergraduate Student **2021-present**
- Hemantha Tushara Govindu, Undergraduate Student **2021-present**

- Hoang Truong, Ph.D. student **2017**
- Duy Pham, Software Developer **2017**
- Ed Salisbury, CS Engineering Senior Design Competition Winner **2017**
- Lily Dam, CS Engineering Senior Design Competition Winner **2017**
- Bradley Dufresne, CS Engineering Senior Design Competition Winner **2017**
- Sean Kuhlman, CEAS Engineering Senior Design Competition Winner **2016**
- Cory Coellen, CEAS Engineering Senior Design Competition Winner **2016**
- Michael Hunsinger, CEAS Engineering Senior Design Competition Winner **2016**
- Raphael O'Flynn, CEAS Engineering Senior Design Competition Winner **2016**