Nhat (Nick) Pham,

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Research Interests	Edge-AI for Healthcare, Intelligent Cyber-Physical Systems, Mobile and Wearable Systems, Quantum-based Human Sensing, and Embedded Operating Systems.

Education

DPhil (Ph.D.) candidate in Computer Science,
University of Oxford, Oxford, United Kingdom
Advisors: Prof. Niki Trigoni, Prof. Andrew Markham, and Prof. Tam Vu
Duration: 2020 - 12/2022 (Expected)

Ph.D. student in Computer Science,
University of Colorado Boulder (CU Boulder), Colorado, United States
Advisor: Prof. Tam Vu
Duration: 2018 - 2020 (Transferred to Oxford)

M.Sc. in Computer Science,
Korea Advanced Institute of Science and Technology (KAIST), Daejeon, South Korea
Advisor: Prof. Daeyoung Kim
Duration: 2016 - 2018

B.Eng. in Computer Engineering
Vietnam National University - Ho Chi Minh city University of Technology (HCMUT), Vietnam
Advisor: Dr. Anh Pham and M.E. Hieu Bui
Duration: 2010 - 2015, Honor Program (Top 1%).

Awards & Recognitions

University of Oxford DPhil Scholarship	2020-2023
Communication of the ACM Research Highlight	2021
ACM SIGMOBILE Research Highlight	2020
ACM GetMobile Research Highlight	2019
Best Paper Award, ACM MobiCom 2019	2019
KAIST Graduate Scholarship, KAIST, South Korea	2016-2018
HCMUT Silver graduation medal, HCMUT, Vietnam.	2015
HCMUT Excellence Scholarship, HCMUT, Vietnam.	2011-2015
Odon Vallet's Fellowship, Vietnam.	2009-2011

Publications

■ *Under review*

- A Large-Scale Study of a Sleep Tracking and Improving Device with Closed-loop and Personalized Real-time Acoustic Stimulation.
  Under review for **Science Translational Medicine**
  A. Nguyen, G. Pogoncheff, B. Dong, N. Bui, H. Truong, **N. Pham**, L. Nguyen, S. Ha, T. Vu.

■ *Conferences*

1. PROS: an Efficient Pattern-Driven Compressive Sensing Framework for Low-Power Biopotential-based Wearables with On-chip Intelligence.
   Nhat Pham, Hong Jia, Minh Tran, Tuan Dinh, Nam Bui, Young Kwon, Dong Ma, Phuc Nguyen, Cecilia Mascolo, and Tam Vu.
   ACM MobiCom 2022 - The 28th ACM Intl' Conf. on Mobile Computing and Networking.
   (Accepted, AR[1]: 17.8%)

2. IoTree: A Battery-free Wearable System with Biocompatible Sensors for Continuous Tree Health Monitoring.
   Tuan Dang, Trung Tran, Khang Nguyen, Tien Pham, **Nhat Pham**, Tam Vu, and Phuc Nguyen.
   ACM MobiCom 2022 - The 28th ACM Intl' Conf. on Mobile Computing and Networking.
   (Accepted, AR: 17.8%)

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[1]Acceptance Ratio

3. DroneScale: Drone Load Estimation Via Remote Passive RF Sensing.
Phuc Nguyen, Vimal Kakaraparthi, Nam Bui, Nikshep Umamahesh, **<u>Nhat Pham</u>**, Hoang Truong, Yeswanth Guddeti, Dinesh Bharadia, Eric Frew, Richard Han, Daniel Massey, Tam Vu.
ACM SenSys 2020 - The 18th ACM Intl' Conf. on Embedded Networked Sensor Systems. *(AR: 20.7%)*

4. WAKE: A Behind-the-ear Wearable System for Microsleep Detection.
<u>Nhat Pham</u>, Tuan Dinh, Zohreh Raghebi, Taeho Kim, Nam Bui, Phuc Nguyen, Hoang Truong, Farnoush Banaei-Kashani, Ann Halbower, Thang Dinh, and Tam Vu.
ACM MobiSys 2020 - The 18th ACM Intl' Conf. on Mobile Systems, Applications, and Services. *(AR: 19.4%)*

5. Painometry: Wearable and Objective Quantification System for Acute Postoperative Pain.
H. Truong, N. Bui, Z. Raghebi, M. Ceko, **<u>N. Pham</u>**, 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 2020 - The 18th ACM Intl' Conf. on Mobile Systems, Applications, and Services. *(AR: 19.4%)*

6. eBP: A Wearable System For Frequent and Comfortable Blood Pressure Monitoring.
Nam Bui, **<u>Nhat Pham</u>**, Jessica Barnitz, Phuc Nguyen, Hoang Truong, Taeho Kim, Anh Nguyen, Zhanan Zou, Nicholas Farrow, J. Xiao, Robin Deterding, Thang Dinh and Tam Vu.
ACM MobiCom 2019 - The 25th ACM Intl' Conf. on Mobile Computing and Networking. *(AR: 16.1%)*
**Best Paper Award, ACM SIGMOBILE Research Highlight 2020,
ACM CACM, GetMobile Research Highlights 2021, 2019**

7. MSHCS-MAC: A MAC protocol for Multi-hop cognitive radio networks based on Slow Hopping and Cooperative Sensing approach.
<u>Nhat Pham</u>, Kiwoong Kwon, and Daeyoung Kim.
IEEE ISCC 2018 - The 23th IEEE Symposium on Computers and Communications, Brazil, June 2018.

8. Oliot-OpenCity: Open Standard Interoperable Smart City Platform.
Yalew Tolcha, Minh Nguyen, Jawook Byun, Kiwoong Kwon, Jiyong Han, Wondeuk Yoon, Nakyung Lee, Hyunseob Kim, **<u>Nhat Pham</u>**, and Daeyoung Kim.
IEEE ISC2 2018 - IEEE Intl' Smart Cities Conference, Kansas City, Missouri, USA, Sep. 2018

9. IsV2C: An Integrated Road Traffic-Network-Cloud Simulator for V2C Connected Car Services.
Heejae Kim, Jiyong Han, Seonghwan Kim, Jisoo Choi, Dongsik Yoon, Minsu Jeon, Eunjoo Yang, **<u>Nhat Pham</u>**, Sungpil Woo, Daeyoung Kim and Chan-Hyun Youn.
IEEE SCC 2017 - The 14th IEEE Intl' Conf. on Services Computing, Hawaii, USA, Jun. 2017.

10. GS1 Global Smart Parking System: One Architecture to Unify Them All.
<u>Nhat Pham</u>, Muhammad Hassan, Hoang Minh Nguyen and Daeyoung Kim.
IEEE SCC 2017 - The 14th IEEE Intl' Conf. on Services Computing, Hawaii, USA, Jun. 2017.

11. Towards an Open Framework for Home Automation Development.
Dang-Nhat Pham-Huu, Van-Hien Nguyen, Van-Anh Trinh, Van-Hieu Bui, and Hoang-Anh Pham.
IEEE ACOMP 2015 - The 9th Intl' Conf. on Advanced Computing and Applications., Ho Chi Minh City, Vietnam, Nov. 2015.

■ *Journals*

12. Detection of Microsleep Events with a Behind-the-ear Wearable System.
IEEE TMC - IEEE Transactions on Mobile Computing (IF: 5.577, preprint).
<u>Nhat Pham</u>, Tuan Dinh, Taeho Kim, Zohreh Raghebi, Nam Bui, Hoang Truong, Tuan Nguyen, Farnoush Banaei-Kashani, Ann Halbower, Thang Dinh, Phuc Nguyen, and Tam Vu.

13. eBP: Frequent and comfortable blood pressure monitoring from inside human's ears.
ACM CACM - Communications of the ACM, Aug. 2021. **(Research Highlight)**
Nam Bui, **<u>Nhat Pham</u>**, Jessica Barnitz, Phuc Nguyen, Hoang Truong, Taeho Kim, Anh Nguyen, Zhanan Zou, Nicholas Farrow, J. Xiao, Robin Deterding, Thang Dinh and Tam Vu.

14. eBP: Frequent and comfortable blood pressure monitoring from inside human's ears.
    ACM GetMobile - Mobile Computing and Communications, Dec. 2019. **(Research Highlight)**
    Nam Bui, <u>**Nhat Pham**</u>, Hoang Truong, Phuc Nguyen, J. Xiao, Robin Deterding, and Tam Vu.

15. Epileptic Seizure Detection and Experimental Treatment: A Review.
    Taeho Kim, Phuc Nguyen, <u>**Nhat Pham**</u>, Nam Bui, Hoang Truong, Sangtae Ha, Tam Vu
    Frontiers in Neurology, Jul. 2020.

16. MSHCS-MAC: A MAC for Multi-hop Cognitive Radio Networks Based on Slow Hopping and Cooperative Sensing Approach with Time Synchronization.
    Won-Deuk Yoon, <u>**Nhat Pham**</u>, Ki-Woong Kwon, Jang-Gwan Im, Dae-Young Kim
    KICS - The Journal of Korean Institute of Communications and Information Sciences, Nov. 2018

■ *Workshops and Demos*

17. Demo: Earable - An Ear-Worn Biosignal Sensing Platform for Cognitive State Monitoring and Human-Computer Interaction.
    <u>**Nhat Pham**</u>, Taeho Kim, Frederick M Thayer, Anh Nguyen, and Tam Vu.
    ACM MobiSys 2019 - The 17th ACM Intl' Conf. on Mobile Systems, Applications, and Services.

18. GS1 Global Smart Parking System: Integrated architecture that provides interoperability of global systems.
    <u>**Nhat Pham**</u>, Sungpil Woo, Muhammad Hassan, Hoang Minh Nguyen and Daeyoung Kim.
    KCC 2017 - Korea Computer Congress, Jeju, Korea, Jul. 2017.

Patents

■ *International Patents*

1. Tam Vu, Robin Deterding, Ann Halbower, Farnoush Banaei-Kashani, **Nhat Pham**, and Nam Bui, "A Wearable System for Behind-the-Ear Sensing and Stimulation", PCT/US2020/031712.

2. Tam Vu, Robin Deterding, Nam Bui, and **Nhat Pham**, "Health Sticker: A Modular Adhesive Platform Monitoring Vital Signals", PCT/US2020/015961.

■ *Provisional Applications*

3. Tam Vu, Robin Deterding, Farnoush Banaei-Kashani, **Nhat Pham**, and Nam Bui, "A Wearable System for Intra-Ear Sensing and Stimulating", Provisional Application No.: 62/900,187.

4. Tam Vu, Robin Deterding, Nam Bui, and **Nhat Pham**, "eBP: A Wearable System For Frequent and Comfortable Blood Pressure Monitoring From User's Ear", Provisional Application No.: 62/900,182.

5. Tam Vu, Robin Deterding, Nam Bui, and **Nhat Pham**, "Breathing Gripper: A Miniature Breath Monitoring Device", Provisional Application No.: 62/968,369.

Experience

■ *Research Experience*
- **Graduate Research Assistant**, University of Colorado Boulder, USA.   2018-2020
- **Researcher**, Real-time and embedded systems lab, KAIST.   2018

■ *Teaching Experience*
- **Digital Systems**, Teaching Assistant/Tutor (8 students), Oxford, UK.   Hilary & Trinity 2021
- **Concurrent Programming**, Tutor (6 students), Oxford, UK.   Hilary & Trinity 2021
- **Linear Algebra**, Tutor (4 students), Oxford, UK.   Michaelmas 2020 & Trinity 2021
- **Data and computer communication**, Instructor (30-40 students), HCMUT, Vietnam.   Fall 2015
- **Embedded systems**, Instructor ($\sim$20 students), HCMUT, Vietnam.   Spring 2015

■ *Mentoring Experience*
- **Tuan Tran**, Research Mentor, 1st-year PhD student, CU Boulder.   Since Fall 2022
- **Ada Alevizaki**, Research Mentor, Final-year DPhil student, University of Oxford. Since Hilary 2022
- **Leopold Beuken**, Peer-mentor, First year PhD student, CU Boulder.   Fall 2019
- **Amit Roy**, Research Mentor, Master student, CU Boulder.   Fall 2019

- ■ *Work Experience*
  - **Technical Consultant**, Earable Inc., Colorado, USA. Since Oct. 2020
  - **Embedded Software Engineer**, FPT Software, Ho Chi Minh City, Vietnam. 2015
  - **Embedded Software Intern**, Applied Micro Circuits Corporation, Ho Chi Minh City, Vietnam. 2014
  - **Kernel Maintainer**, RIOT-OS (The friendly Operating System for the Internet of Things). 2014-2015
  - **Student participant**, 2014 Intel Cup Undergraduate Electronic Design Contest, Shanghai Jiao Tong University, Shanghai, China. 2014

Services

- ■ *Technical Shadow Program Committee*
  - ACM SenSys 2022.

- ■ *Student Reviewer*
  - ACM MobiCom 2019-2021.
  - ACM MobiSys 2021-2022.
  - ACM SenSys 2019-2020.
  - ACM HotMobile 2021.
  - IEEE Transactions on Biomedical Circuits and Systems 2021.
  - IEEE SECON 2020.
  - IEEE/ACM CHASE 2020.

Computer Skills

Programming languages, C/C++, Matlab, Python, Verilog, Java, Android, Bash, Makefile, Java Script, GNU linker script.

Hardware Platform, Software defined radios (USRP, bladeRF), Micro-controllers (ARM Cortex, MSP430, PIC, 8051, MIPS, Intel Atom), and FPGAs.

Operating systems, Linux, Android, Windows, TI-RTOS, freeRTOS, RIOT-OS, Contiki.

Software, Altium (PCB design), GNU Radio, openOCD, GDB, MATLAB.

Version Control, Git, Perforce.

References

Professor **Niki Trigoni**,
Department of Computer Science,
University of Oxford,
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