Keum San Chun

PERSONAL DATA

Keum San Chun
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EDUCATION

The University of Texas-Austin, Austin, TX
Cockrell School of Engineering
Electrical Engineering
Supervisor: Edison Thomaz, Ph. D.
2015 – 2019 (M.S.)
2019 – 2020 (Ph. D.)

University of Wisconsin-Madison, Madison, WI
College of Engineering
Biomedical Engineering
Supervisor: John G. Webster, Ph. D.
2009 – 2015 (B.S.)

PROFESSION INTERESTS

Wearable/Mobile Computing
Human Activity Recognition: Automated Dietary Monitoring
Mobile Healthcare: Continuous Monitoring of Health
Medical Devices, Sensors and Instrumentation
Physiological Measurements

EXPERIENCE

2017 ~ **Graduate Research Assistant, University of Texas at Austin (Austin, TX)**
Human Signals Lab
Supervisor: Edison Thomaz, Ph. D.
Human activity recognition and health monitoring using mobile sensors

2019 Summer **Research Scientist Intern, Samsung Research America (Mountain View, CA)**
Digital Health Lab
Supervisor: Viswam Nathan, Ph. D. and Jilong Kuang, Ph. D.
Developed algorithms for detecting and assessing obstructive pulmonary diseases using natural speech analysis

2018 Summer **Neurotechnology Intern, Battelle Memorial Institute (Columbus, OH)**
NeuroLife™
Supervisor: Patrick Ganzer, Ph. D.
Developed a non-invasive closed-loop bioelectronic medical system for treating hypertensive crisis

2016 ~ 17 **Graduate Research Assistant, University of Texas at Austin (Austin, TX)**
Lewpea Lab (Cognitive Neuroscience Lab)
Supervisor: Jarrod A. Lewis-Peacock, Ph. D.
Realtime functional magnetic resonance image processing pipeline for studying prospective memory

2014 ~ 15 **Undergraduate Research Assistant, University of Wisconsin at Madison (Madison, WI)**
Bioinstrumentation Lab
Supervisor: John G. Webster, Ph. D.
Asthma shirt: a continuous monitoring system for asthma attack

PEER-REVIEWED PUBLICATIONS

J : Journal **C** : Conference

C3 2020 July — Eating Episode Detection with Jawbone-Mounted Inertial Sensing (Accepted)
Keum San Chun, Rebecca Adaimi, Hyoyoung Jeong, Edison Thomaz
International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)

C2 2020 March — Towards Passive Assessment of Pulmonary Function from Natural Speech Recorded Using a Mobile Phone
Keum San Chun, Viswam Nathan, Korosh Vatanparvar, Ebrahim Nemati, Md Mahbubur Rahman, Erin Blackstock, Jilong Kuang
IEEE Conference on Pervasive Computing and Communications (PerCom)

C1 2019 March — Towards a Generalizable Method for Detecting Fluid Intake with Wrist-Mounted Sensors and Adaptive Segmentation
Keum San Chun, Ashley B. Sanders, Rebecca Adaimi, Necole Streeper, David E. Conroy, Edison Thomaz
Proceedings of the ACM: Intelligent User Interfaces (IUI) Pages 80 – 85

J2 2018 March — Detecting Eating Episodes by Tracking Jawbone Movements with a Non-Contact Wearable Sensor
Keum San Chun, Sarnab Bhattacharya, Edison Thomaz
Proceedings of the ACM:Interactive Mobile, Wearable and Ubiquitous Technologies(IMWUT), Volume 2, Issue 1

J1 2017 January — Reducing thumb extensor risk in laboratory rat gavage
Amit J. Nimunkar, **Keum San Chun**, Ngoc Phung, Kevin Wreksoatmodjo, Thomas Y. Yen, Robert G. Radwin
Applied Ergonomics 58 (2017): 151-155

TEACHING EXPERIENCE

Spring 2020 — **Physiology Lab (BIO 165U)**
The University of Texas at Austin

Spring 2019 — **Introductory Biology (BIO 206L)**
The University of Texas at Austin

Spring 2014 — **Undergraduate Tutoring, (General Physics, Signal Processing)**
Greater University Tutoring Service (GUTS)
University of Wisconsin at Madison

Spring 2011 — **Undergraduate Tutoring, (Organic Chemistry)**
Greater University Tutoring Service (GUTS)
University of Wisconsin at Madison

Fall 2010 — **Undergraduate Tutoring, (General Physics)**
Greater University Tutoring Service (GUTS)
University of Wisconsin at Madison

ADVISING / MENTORING

Undergraduates — Jordon Kashanchi (Fall 2019 – Present)
Caroline Dolbear (Fall 2019 – Present)

SELECTED PROJECTS

2018 Summer — **Non-invasive Closed-loop Bioelectronic Medical System for Treating Hypertensive Crisis**
Developing a non-invasive closed-loop bioelectronic medical system for treating hypertensive crisis

2018 Summer **Android App for Bio-Tattoo Sensor**
Developing an Android app with real time respiratory rate calculation algorithm

2018 Spring **Drinking Detection Using a Commercial Activity Tracker**
Developed a drinking detection algorithm (90.3 % precision and 91.0% recall)

2017 Fall **Eating Detection using an IR proximity sensor**
Developed a wearable necklace for automated dietary monitoring (95.2% precision and 81.9% recall)

2017 Spring **Portable Visual Evoked Potential (VEP) Measurement Device**
A portable Point-Of-Care device for VEP

2016 Fall **Real-time Functional MR Image Processing Program for Neurofeedback System**
Realtime functional magnetic resonance image processing pipeline for prospective memory study

2015 Spring **Automated Rat Gavage System**
Designed an automated gavage system that links RFID animal database with infusion pump

2015 Spring **Asthma Shirt – Non-invasive Asthma Monitoring System**
A continuous monitoring system for detecting asthma attack

2014 Spring **EMG Assisted Control System**
Linked contraction of biceps for controlling windows master volume for patients without fine motor control

FELLOWSHIP/AWARD

2019 Professional Development Award
2019 IUI Student Travel Grant
2018 Ubicomp 2018 Student Travel Grant

SERVICE

2020 PerCom2020 Student Volunteer
2019 IUI2019 Student Volunteer
2018 Ubicomp/ISWC 2018 Student Volunteer
2017 Ubicomp/ISWC 2017 Student Volunteer

SKILLS

- Machine Learning (scikit-learn, keras)
- Signal Processing
- Android Application Development (Android Studio)
- 3D Design (Solidworks and Rhinoceros)
- Real time fMRI Image Processing (fMRI Software Library)
- Statistical Analysis
- Physiological Measurements (ECG, EEG, EOG, EMG, PPG)
- Hardware/PCB design (Eagle CAD)