

Mostafa Mirshekari

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RESEARCH AREAS

- Structure as a Sensor
- Physics-guided Learning in Smart Structures and Buildings
- Cyber Physical Systems(CPS) and Internet of Things(IoT)
- Structural Dynamics and Wave Propagation
- Localization and Navigation in Indoor Environments

EDUCATION

Carnegie Mellon University, Pittsburgh, Pennsylvania, USA

Doctor of Philosophy (Ph.D.) in Civil and Environmental Engineering May 2015 – present

- Advisers: Hae Young Noh, Pei Zhang
- Thesis Title: "Occupant Monitoring using Footstep-Induced Floor Vibrations"
- Cumulative GPA: 4.0 / 4.0
- Expected Graduation: December 2019

Master in Civil and Environmental Engineering Aug 2014 – May 2015

- Cumulative GPA: 3.98 / 4.0

Univeristy of Technology, Johor Bahru, Johor, Malaysia

Master of Engineering (M.Eng.) in Civil-Structure Feb 2012 – Sep 2013

- Cumulative GPA: 4.0 / 4.0

University of Tehran, Tehran, Tehran, Iran

Master of Science (M.S.) in Project and Construction Management Aug 2008 – May 2011

- Cumulative GPA: 18.45 / 20

Bachelor of Engineering (B.Eng) Civil Engineering Aug 2003 – May 2008

- Cumulative GPA: 14.97 / 20

RESEARCH EXPERIENCES

Carnegie Mellon University, Pittsburgh, Pennsylvania, USA

Graduate Student Researcher May 2015 – present

- Project Title: Structure as a Sensor: Occupant Monitoring using Footstep-Induced Floor Vibrations
- Characterized the dispersive wave propagation characteristics for occupant localization.
- Introduced physics-guided model transfer for accurate footstep and occupant detection.
- Studied the effect of obstructions on the wave propagation to enable sparse occupant localization.
- Collaborated on 1) extending the idea of "Structure as a Sensor" to "Common Surfaces as a Sensor" for Human-Computer Interaction (HCI), 2) characterizing the effect of walking speed on the structural vibration for occupant identification and occupancy estimation, 3) leveraging the attenuation rates to enable footstep balance estimation, and 4) designing an adaptive vibration sensing system.
- Collaborated on developing Deep-Learning-Based Online Active Learning for medical image processing.

University of Technology, Johor Bahru, Johor, Malaysia

Research Assistant Sep 2013 – Mar 2014

- Project Title: Damage Detection and SHM using Subspace Identification Method
- Studied and developed the codes for damage detection and structural health monitoring using Subspace Identification (collaboration with Dr. Norhisham Bakhary)

University of Technology, Johor Bahru, Johor, Malaysia

Graduate Researcher Feb 2012 – Sep 2013

- Project Title: Dynamic Simulation of Columns Considering Geometric Nonlinearity
- Devised a method for dynamic analysis of structures taking geometric nonlinearities into consideration and validated the method through simulations

University of Tehran, Tehran, Tehran, Iran

Graduate Researcher Aug 2008 – May 2011

- Project Title: Risk Assessment in Construction Projects using Fuzzy Expert Systems
- Developed algorithms for risk assessment approach for construction projects in Civil Engineering based on fuzzy expert systems.
- Collected data from construction industry experts to validate the approach

**ACADEMIC
HONORS
& AWARDS**

Best Student Paper Award Dynamics Committee, Engineering Mechanics Institute (EMI) Conference	2019
Outstanding Teaching Assistant Award Department of Civil and Environmental Engineering, CMU	2019
Best Poster Award The 18th ACM/IEEE International Conference on Information Processing in Sensor Networks (IPSN 2019)	2018
Best Paper Award IEEE International Conference on Machine Learning Applications	2018
Invited Talks 7WCSCM Conference	2018
Best Student Paper Award Dynamics Committee, Engineering Mechanics Institute (EMI) Conference	2018
John and Claire Bertucci Fellowship Carnegie Mellon University	2016
Best Poster Award ACM Sensys, 2016	2016
Fenves Travel Grant for Attending Sensys Conference in Stanford, CA Carnegie Mellon University	2016
Fenves Travel Grant for Attending EMI Conference in Nashville, TN Carnegie Mellon University	2016
Dean's List Carnegie Mellon University	2015
Best Poster Award, CPS week '15 Cyber Physical Systems Week (among five top conferences)	2015
Best Student Award in 51st Convocation Ceremony of University of Technology, Malaysia	2013
Best Student in 'Project Management in Construction' group	2011
Ranked Second in Nation-wide University Entrance Exam among 4500 applicants applying for M.Sc. program in "Project Management in Construction", Iran.	2008

PUBLICATIONS

UNDER REVIEW PAPERS

[UJ3] M. Mirshekari, J. Fagert, S. Pan, P. Zhang, and H. Noh, "Obstruction-Invariant Occupant Localization Using Footstep-Induced Structural Vibrations," *Under Review in Sensors*

[UJ2] J. Fagert, M. Mirshekari, S. Pan, L. Lowes, M. Iammarino, P. Zhang, and H. Noh, "Gait Balance Symmetry Estimation Using Footstep Induced Structural Floor Vibrations," *Under Review in Sensors*

[UJ1] A. Smailagic, P. Costa, A. Gaudio, K. Khandelwal, M. Mirshekari, J. Fagert, D. Walawalkar, S. Xu, A. Galdran, P. Zhang, A. Campilho, and H. Noh, "O-MedAL: Online Active Deep Learning for Medical Image Analysis," *Under Review in Data Mining and Knowledge Discovery*

JOURNALS

[J7] P. Zhang, S. Pan, M. Mirshekari, J. Fagert, and H. Noh, "Structures as Sensors: Indirect Sensing for Inferring Users and Environments," *Computer*, vol. 52, no. 10, pp. 84-88, 2019

[J6] M. Mirshekari, J. Fagert, S. Pan, P. Zhang, and H. Noh, "Step-Level Occupant Detection across Different Structures through Footstep-Induced Floor Vibration using Model Transfer," *accepted in Journal of Engineering Mechanics*

[J5] S. Pan, M. Mirshekari, J. Fagert, C. Ruiz, H. Noh, and P. Zhang, "Area Occupancy Counting through Sparse Ambient Structural Vibration Sensing," *IEEE Pervasive computing Special Issue - IoT Communication (Jan/Mar 2019)*

[J4] M. Mirshekari, S. Pan, J. Fagert, P. Zhang, E. Schooler, and H. Noh, "Occupant localization using footstep-induced structural vibration," *Mechanical Systems and Signal Processing 112 (2018): 77-97*

[J3] S. Pan, M. Mirshekari, J. Fagert, C.G. Ramirez, A. Chung, C. Hu, J.P. Shen, P. Zhang, and H. Noh, "Characterizing human activity induced impulse and slip-pulse excitations through structural vibration." *Journal of Sound and Vibration 414 (2018): 61-80*

[J2] S. Pan, T. Yu, M. Mirshekari, J. Fagert, A. Bonde, O.J.Menshoel, H. Noh, and P. Zhang "FootprintID: Indoor Pedestrian Identification through Ambient Structural Vibration Sensing.," *Proceedings of the ACM on Interactive, Mobile, Wearable and Ubiquitous Technologies, 1(3), 89 (2017)*

[J1] S. Pan, S. Xu, M. Mirshekari, P. Zhang, and H. Noh, "Collaboratively Adaptive Vibration Sensing System for High Fidelity Monitoring of Structural Responses Induced by Pedestrians.," *Frontiers in Built Environment 3 (2017): 28*

PEER-REVIEWED (JOURNAL-LEVEL) CONFERENCE PAPERS

[PRC2] D. Walawaker, K. Khandelwal, M. Mirshekari, J. Fagert, P. Zhang, H. Noh, P. Costa, and A. Smailagic, "MedAL: Accurate and Robust Deep Active Learning for Medical Image Analysis," *17th IEEE International Conference on Machine Learning and Applications (Dec 2018) - Acceptance rate: 31%*. Highly selective, archived, premier conference in machine learning domain.

[PRC1] S. Pan, C. Ramirez, M. Mirshekari, J. Fagert, A. Chung, C. Hu, J. Shen, H. Noh, and P. Zhang, "SurfaceVibe: Vibration-Based Tap and Swipe Tracking on Ubiquitous Surfaces," *16th International Conference on Information Processing in Sensor Network (IPSN), Pittsburgh, Pennsylvania, USA, 2017. Acceptance rate: 18%*. Highly selective, archived, premier conference in sensor network domain.

OTHER CONFERENCE PAPERS

[OC12] M. Mirshekari, J. Fagert, S. Pan, P. Zhang, H. Noh, "Physics-Guided Model Transfer for Human Gait Monitoring using Footstep-Induced Floor Vibration," *Accepted in The 12th International Workshop on Structural Health Monitoring, IWSHM 2019*

[OC11] J. Fagert, M. Mirshekari, S. Pan, P. Zhang, H. Noh, "Vibration Source Separation for Multiple People Gait Monitoring Using Footstep-Induced Floor Vibrations," *Accepted in The 12th International Workshop on Structural Health Monitoring, IWSHM 2019*

[OC10] L. Shi, M. Mirshekari, J. Fagert, Y. Chi, H. Noh, P. Zhang, S. Pan, "Device-free Multiple People Localization through Floor Vibration," *Accepted in 1st ACM Workshop on Device-Free Human Sensing (DFHS '18), Buildsys 2019*

[OC9] Y. Zhang, J. Fagert, M. Mirshekari, H. Noh, P. Zhang, L. Zhang, "Occupant Activity Level Estimation Using Floor Vibration," *The First Workshop on Combining Physical and Data-Driven Knowledge in Ubiquitous Computing (CPD '18), UbiComp 2018*

[OC8] M. Mirshekari, J. Fagert, A. Bonde, P. Zhang, H. Noh, "Human Gait Monitoring Using Footstep-Induced Floor Vibrations Across Different Structures," *The First Workshop on Combining Physical and Data-Driven Knowledge in Ubiquitous Computing (CPD '18), UbiComp 2018*

[OC7] T. Yu, S. Pan, S. Xu, X. Chen, M. Mirshekari, J. Fagert, H. Noh, P. Zhang, and Ole J. Mengshoel, "ILPC: Iterative Learning using Physical Constraints in Real-world Sensing Data," *Presented in AAAI Workshop SmartIoT 2018*

[OC6] M. Mirshekari, J. Fagert, S. Pan, P. Zhang, and H. Noh, "Physics-Guided Model Transfer for Human Gait Monitoring using Footstep-Induced Floor Vibration," *International Workshop in Structure Health Monitoring (IWSHM)*, Stanford, California, USA, 2019.

[OC5] J. Fagert, M. Mirshekari, S. Pan, P. Zhang, and H. Noh, "Characterizing left-right gait balance using footstep-induced structural vibrations," *SPIE Smart Structures and Materials+ Nondestructive Evaluation and Health Monitoring. International Society for Optics and Photonics.*, Portland, Oregon, USA, 2017.

[OC4] J. Fagert, M. Mirshekari, S. Pan, P. Zhang, and H. Noh, "Monitoring Hand-Washing Practices using Structural Vibrations," *IWSHM 2017*, Stanford California, USA, 2017.

[OC3] S. Pan, M. Mirshekari, P. Zhang, and H. Noh, "Occupant traffic estimation through structural vibration sensing," in *Proceedings of SPIE Smart Structures and Materials+ Nondestructive Evaluation and Health Monitoring*, Las Vegas, Nevada, USA, 2016.

[OC2] M. Mirshekari, S. Pan, P. Zhang, and H. Noh, "Characterizing wave propagation to improve indoor step-level person localization using floor vibration," in *Proceedings of SPIE Smart Structures and Materials+ Nondestructive Evaluation and Health Monitoring*, Las Vegas, Nevada, USA, 2016.

[OC1] M. Lam, M. Mirshekari, S. Pan, P. Zhang, and H. Noh, "Robust Occupant Detection Through Step-Induced Floor Vibration By Incorporating Structural Characteristics," in *Proceedings of IMAC 34*, Orlando, Florida, USA, 2016.

POSTERS AND EXTENDED ABSTRACTS

[EA5] J. Fagert, M. Mirshekari, S. Pan, P. Zhang, and H. Noh, "Structural Property Guided Gait Parameter Estimation Using Footstep-Induced Floor Vibrations," *IMAC 37*, Orlando, Florida, USA, 2019.

[P5] J. Fagert, M. Mirshekari, S. Pan, P. Zhang, and H. Noh, "Poster Abstract: Gait Health Monitoring Through Footstep-Induced Floor Vibrations," in *Proceedings of the 18th International Conference on Information Processing in Sensor Network*, Montreal, Quebec, Canada, 2019.

[EA4] J. Fagert, M. Mirshekari, S. Pan, P. Zhang, and H. Noh, "Characterizing Structural Changes to Estimate Walking Gait Balance," *IMAC 36*, Orlando, Florida, USA, 2018.

[D1] Y. Zhang, S. Pan, J. Fagert, M. Mirshekari, H. Noh, P. Zhang, L. Zhang, "Vibration-Based Occupant Activity Level Monitoring System," *Proceedings of the 16th ACM Conference on Embedded Networked Sensor Systems, SenSys 2019*

[EA3] A. Bonde, M. Mirshekari, J. Fagert, S. Pan, H. Noh, and P. Zhang, "Seat Vibration for Heart Monitoring in a Moving Automobile," *First International Workshop on Data: Acquisition To Analysis (DATA '18), SenSys 2018*

[EA2] Y. Zhang, S. Pan, J. Fagert, M. Mirshekari, H. Noh, P. Zhang, L. Zhang, "Occupant-Induced Structure Vibration Dataset in an Office Building," *First International Workshop on Data: Acquisition To Analysis (DATA '18), SenSys 2018*

[EA1] M. Mirshekari, P. Zhang, and H. Noh, "Calibration-Free Footstep Frequency Estimation using Structural Vibration," *IMAC 35*, Orange County, Garden Grove California, USA, 2017.

[P4] S. Pan, K. Lyons, M. Mirshekari, H. Noh, and P. Zhang, "Multiple Pedestrian Tracking through Ambient Structural Vibration Sensing: Poster Abstract," *Proceedings of the 14th ACM Conference on Embedded Network Sensor Systems*, Stanford, California, USA, 2016.

[P3] M. Mirshekari, P. Zhang, and H. Noh, "Non-intrusive Occupant Localization Using Floor Vibrations in Dispersive Structure: Poster Abstract," *Proceedings of the 14th ACM Conference on Embedded Network Sensor Systems*, Stanford, California, USA, 2016.

[P2] S. Pan, M. Mirshekari, H. Noh, and P. Zhang, “Structural sensing system with networked dynamic sensing configuration,” in *Proceedings of the 14th International Conference on Information Processing in Sensor Network*, Seattle, Washington, USA, 2015.

[P1] M. Mirshekari, S. Pan, A. Bannis, M. Lam, P. Zhang, and H. Noh, “Step-level person localization through sparse sensing of structural vibration,” in *Proceedings of the 14th International Conference on Information Processing in Sensor Network*, Seattle, Washington, USA, 2015.

**PRESENTATIONS
AND TALKS**

[IT1] M. Mirshekari, S. Pan, J. Fagert, P. Zhang, and H. Noh, “Calibration-Free Occupant Localization using Structural Vibration through Locally Adaptive Multilateration,” in *The Seventh World Conference on Structural Control and Monitoring (7WCSCM)*, Qingdao, China, 2018.

PRESENTATIONS

[T7] M. Mirshekari, J. Fagert, S. Pan, P. Zhang, and H. Noh, “Obstruction-Invariant Indoor Occupant Localization Using Footstep-Induced Structural Vibration,” in *Engineering Mechanics Institute (EMI) Conference*, Los Angeles, California, USA, 2019.

[T6] S. Pan, M. Mirshekari, J. Fagert, P. Zhang, and H. Noh, “Structural Element Modeling for Vibration-based Indoor Human Sensing Configuration,” in *The Seventh World Conference on Structural Control and Monitoring (7WCSCM)*, Qingdao, China, 2018.

[T5] M. Mirshekari, J. Fagert, S. Pan, P. Zhang, and H. Noh, “Buildings as Sensors: Indirect Monitoring of Human Activities through Structural Vibrations,” in *Conference on Smart Materials, Adaptive Structures and Intelligent Systems (SMASIS)*, San Antonio, Texas, USA, 2018.

[T4] M. Mirshekari, J. Fagert, S. Pan, P. Zhang, and H. Noh, “Human Health Tracking through Gait-Induced Floor Vibrations Across Different Structures,” in *Engineering Mechanics Institute (EMI) Conference*, Boston, Massachusetts, USA, 2018.

[T3] M. Mirshekari, P. Zhang, and H. Noh, “Characterizing Wave Propagation to Improve Indoor Person Localization using Floor Vibration,” in *CMU-SNU Student Workshop*, Pittsburgh, PA, USA, 2017.

[T2] M. Mirshekari, J. Fagert, S. Pan, P. Zhang, and H. Noh, “Occupant Localization in Obstructed Indoor Environments using Floor Vibrations,” in *Engineering Mechanics Institute (EMI) Conference*, San Diego, California, USA, 2017.

[T1] M. Mirshekari, P. Zhang, and H. Noh, “Structure-Invariant Indoor Person Localization using Structural Vibration,” in *Engineering Mechanics Institute (EMI) Conference*, Nashville, Tennessee, USA, 2016.

**PATENTS
(PROV.)**

- “Structural Vibration Sensing for Person Identification in Smart Building Applications,” U.S. Patent App. 15/544,928.
- “Surface Vibration Sensing for Arbitrary Gesture Input,” U.S. Provisional Pat. Ser. No. 2017-039, filed [9/6/2016].

**TEACHING
EXPERIENCES**

Carnegie Mellon University, Pittsburgh, Pennsylvania, USA

Future Faculty Candidate

May 2015 – Now

- Program description: The Future Faculty Program helps graduate students develop and document their teaching skills in preparation for a faculty career. Participants in this program learn the principles of effective course design and pedagogy through the seminars, receive feedback on their teaching through teaching feedback consultations, and apply what they have learned in completing a course and syllabus design project and a statement of teaching philosophy project.

Carnegie Mellon University, Pittsburgh, Pennsylvania, USA

Guest Lecturer 2017, 2018, 2019

- Lecture Topic: Support Vector Machines as part of Special Topics: Sensing and Data Mining for Smart Structures and Systems (12-761)
- Course description: Support Vector Machine (SVM) is a deterministic supervised learning approach used for regression and classification. In this lecture, I intuitively discuss the main concepts of SVM and provide its mathematical formulation.

Guest Lecturer 2017, 2018

- Lecture Topic: Model Performance, Bias and Variance as part of Special Topics: Sensing and Data Mining for Smart Structures and Systems (12-761)
- Course description: Assessing the machine learning model performance is an important step in developing accurate ML models. Furthermore, understanding bias, variance, and noise are very important in understanding basic ML concepts such as overfitting which are necessary for model training and troubleshooting. In this course, I discuss these concepts intuitively and through real-life examples (and provide mathematical formulations).

Guest Lecturer 2019

- Lecture Topic: Tutorial for Data Collection using Arduino as part of Special Topics: Sensing and Data Mining for Smart Structures and Systems (12-761)
- Course description: Arduino is an easy-to-use and cheap microcontroller which can be used for data collection. In this hands-on course, I have walked the students through the process of setting up their arduinos, making and connecting their sensing boards, and collecting the data. I have also touched upon some sensing concepts such as resolution and sampling frequency when using the Arduino.

Guest Lecturer 2018

- Lecture Topic: Basics of Signals and Systems and Stochastic Processes as part of Special Topics: Sensing and Data Mining for Smart Structures and Systems (12-761)
- Course description: This course discusses the basics of signals and Systems and stochastic processes which are important in understanding, characterizing, and modelling the dynamic systems. Some of the main concepts discussed in this lecture are: Linear Time-Invariant (LTI) systems, Time vs. Frequency domain analysis, Stochastic Processes and their characteristics, Stationarity, Auto-correlation and Cross-correlation Function, Auto and Power Spectral Densities, Cross-Spectral Density, and Coherence Function.

Teaching Assistant 2017 – 2018 – 2019

- Course Title: Special Topics: Sensing and Data Mining for Smart Structures and Systems (12-761)
- Teaching Faculties: Professor Hae Young Noh
- Course description: This course introduces smart monitoring systems for physical structures and systems using sensing and data analytics. This is a project-based course and the objective is for students to understand the overall process from obtaining data to specific application performance in a systematic way. For this course, I have guided multiple groups in finding and formulating interesting and unique problems and developing suitable and novel solutions.

Teaching Assistant 2015

- Course Title: Civil and Environmental Engineering Design (12-401)
- Teaching Faculties: Professor Larry Cartwright Professor Jim Thompson Professor Sarah Christian
- Course description: A project-based course concentrating on methodology for formulating and solving design problems, characterized by incomplete specifications, open-ended solution space, and partial evaluations.

**PROFESSIONAL
ACTIVITIES**

Ubicomp 2019: Combining Physical and Data-Driven Knowledge in Ubiquitous Computing (CPD), A Ubicomp 2019 Workshop

TPC Member 2019

Ubicomp 2019: Continual and Multimodal Learning for Internet of Things, A Ubicomp 2019 Workshop

TPC Member 2019

EMI 2019: MS94+23 - Integration of Physics-Based Models with Data for Model Identification, Updating, and Uncertainty Quantification, Robustness of infrastructures

Session Chair 2019

The 1st ACM International Workshop on Device-Free Human Sensing (DFHS)

General Co-chair 2019

The 6th ACM International Conference on Systems for Energy-Efficient Buildings, Cities, and Transportation (BuildSys 2019)

Publicity Co-chair 2019

Structural Monitoring and Maintenance, An International Journal

Reviewer 2019 – Present

Journal of Engineering Mechanics

Reviewer 2019 – Present

Mechanical Systems and Signal Processing

Reviewer 2018 – Present

Frontiers in Built Environment

Reviewer 2018 – Present

The Journal of the Acoustical Society of America Express Letters

Reviewer 2017 – Present

Advances in Science, Technology and Engineering Systems Journal

Reviewer 2018 – Present

EMI 2017: MS 142 - Human Performance Sensing and Condition Monitoring

Session Chair 2017

OUTREACH

Summer Engineering Experience for Girls (SEE)

Teaching Assistant 2016

National Engineers Week “Engineer the Future”

Outreach Volunteer 2016

Summer Engineering Experience for Girls (SEE)

Teaching Assistant 2015

National Engineers Week “Engineer the Future”

Outreach Volunteer 2015

**STUDENTS
MENTORED**

Charyl Tan 2019

Duties Description: Charyl was doing research with us during the summer of 2019. She was in charge of preparing a localization demo for the footstep project (inspired by the Harry Potter’s Marauder map). During this time, I had meeting with her at least once a week and tracked her progress. I also worked closely with her to develop a visualization for the demo using Matlab app development toolbox.

Sarah Hamilton 2019

Duties Description: Sarah was doing research with us during the summer of 2019. She was in charge of collecting data, do some data mining analysis, and possibly help with the writing of a journal paper about handwashing. During this time, I had meeting with her on a weekly basis and tracked her progress. I also worked closely with her to collect the data and develop the algorithms.

Laixi Shi 2019

Duties Description: Laixi was doing research with us during the spring of 2019. She was working on the multiple people tracking problem. As part of this project, we had frequent meetings and discussed the algorithm development. The result of this collaboration was a paper submitted to Sensys 2019.

Clara Nelson and Ahmed Al-badawi 2019

Duties Description: Clara and Ahmed were working with us during the summer of 2018. They were in charge of designing, building, and modelling a wooden floor platform. During this time, we had frequent meetings to track the project progress. The created floor has been used in many of several of our papers.

Edmund Lee 2017
 Duties Description: Edmund was working with me during the spring of 2017. He was in charge of analyzing a large vibration dataset we have collected in a nursing home. During this time, we had weekly meetings to track the project progress, prepare the data visualizations, and develop the necessary algorithms to query the data. Further, I have guided him for developing codes to synchronize the camera and vibration data.

Yubo Zhang 2016
 Duties Description: Yubo was working with me during the winter of 2016. She was in charge of analyzing the video dataset we have collected in a nursing home. During this time, we had weekly meetings to track the project progress and discuss the project. Further, I have guided her for developing codes and algorithms to detect motion and localize objects using video data.

Angela Wu 2016
 Duties Description: Angela was working with me during the summer of 2016. She was in charge of transferring our footprint detection demo from labview to the data acquisition toolbox of Matlab. During this time, we had weekly meetings to track the project progress and discuss the project. Further, we have worked closely on conducting a 2-weeks deployment in a nursing home in Pittsburgh.

Qianyue Zhang 2016
 Duties Description: Qianyue (Claire) was working with me during the spring of 2016. She was working with us on collecting some footprint data. During this time, we had weekly meetings to track the project progress and discuss the project.

WORKING EXPERIENCES

Homma Inc., Palo Alto, California, USA
 Intern May 2017 – Aug 2017
 • Course description: Homma Inc. is an AI based software and service company for connected homes. My role in the company was to use my experience in user localization and recognition to provide them with better tools for smart homes.

PROFESSIONAL AFFILIATIONS

American Society of Civil Engineers (ASCE) 2015 – Present
 Student Member
Society of Photographic Instrumentation Engineers (SPIE) 2016 – Present
 Student Member
ASCE EMI Structural Health Monitoring and Control Committee 2018 – Present
 Associate Committee Member

IN THE MEDIA

Our research on Occupant Monitoring using Structural Vibration has been discussed in: (clicking on them opens the website of interest).
 • phys.org
 • ECN Magazine
 • CMU Enrollment
 • CMU Engineering
 Our research on Active Learning for analyzing medical images has been discussed in:
 • Techxplore
 • CMU Engineering
 • CMU ECE
 I have been mentioned in CMU CEE Magazine multiple times for various reasons.
 • Fall 2018
 • Winter 2017
 • Summer 2016
 • Winter 2015

SKILLS

MATLAB, Mathematica, Python, L^AT_EX, Labview, Sap 2000, Safe, Etabs, Abaqus, HTML, CSS