

WEINAN WANG

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EDUCATION

Rutgers, The State University of New Jersey, Ph.D. Candidate

01/2021 – Present

Electrical and Computer Engineering

G.P.A.: 4.0/4.0

Thesis Topic: Artificial Intelligence for Health Monitoring via Non-Invasive Sensors

Core courses: Supervised Machine Learning, Deep Learning, Machine Vision, Detection and Estimation Theory, Convex Optimization

Rutgers, The State University of New Jersey, M.Sc.

09/2018 – 01/2021

Electrical and Computer Engineering

G.P.A.: 4.0/4.0

Thesis: Data-driven Methodologies for Cuff-less Blood Pressure Estimation

Core courses: Digital Signal and Filters, System Analysis, Data Structure and Algorithms, Software Engineering

University of Electronic Science and Technology of China, B.Sc.

09/2015 – 06/2018

Mechanical Design and Automation

G.P.A.: 3.88/4.0

Core courses: Signals and Systems, Theoretical Mechanics, Mechanics of Materials, CAD/CAE Technology

EXPERIENCE

Research Assistant

09/2019 – Present

Department of Electrical and Computer Engineering, Rutgers, The State University of New Jersey

Supervisor: Prof. Laleh Najafizadeh

- **End-to-end Deep Learning-Based Cuff-less Blood Pressure Estimation**
 - Developed novel automatic and fully data-driven blood pressure estimation methods requiring only photoplethysmogram (PPG) signal as input.
 - Developed methods to enable transfer learning of pre-trained deep convolutional networks for blood pressure estimation.
 - Developed methods for converting 1-D physiological signals into images.
 - Developed blood pressure estimation models via long-short-term-memory (LSTM) and various deep convolutional networks (CNN)
- **Pulse Wave Velocity Model-Based Cuff-less Blood Pressure Estimation**
 - Developed robust and physiology-supported blood pressure estimation methods requiring electrocardiogram (ECG) and photoplethysmogram (PPG) as input.
 - Developed and released GUI and API, named **PulseLab**, as the first comprehensive toolbox that enables users to optimize the blood-pressure estimation models.
GitHub Page: <https://github.com/pulselabteam/pulselab>
 - Studied and utilized linear and non-linear regression, multiple linear regression, ridge regression, correlation analysis, Bland-Altman analysis, and signal quality index (SQI) assessment.

Teaching Assistant

09/2021 – 12/2021

Department of Electrical and Computer Engineering, Rutgers, The State University of New Jersey

Courses: Analog & Digital Electronics

PEER-REVIEWED JOURNAL & CONFERENCE PUBLICATIONS

- **W. Wang**, P. Mohseni, K. L. Kilgore and L. Najafizadeh, "Cuff-less blood pressure estimation from photoplethysmography via visibility graph and transfer learning," *IEEE Journal of Biomedical and Health Informatics*, vol. 26, no. 5, pp. 2075-2085, 2021.
- **W. Wang**, F. Marefat, P. Mohseni, K. Kilgore and L. Najafizadeh, "The effects of filtering photoplethysmogram signal on pulse arrival time-systolic blood pressure correlation," to appear in proceedings of *44th Annual International Conference of the IEEE Engineering in Medicine and Biology Society (EMBC)*, Glasgow, Scotland, UK, Jul. 11–15, 2022.
- **W. Wang**, C. A. Delianides, D. B. Green, P. Mohseni, K. L. Kilgore, and L. Najafizadeh, "Systolic blood pressure estimation via photoplethysmography features-an animal study," *Optical Tomography and Spectroscopy*, 2022, Optica Publishing Group, p. JM3A. 6.
- **W. Wang**, P. Mohseni, K. Kilgore, and L. Najafizadeh, "Cuff-less blood pressure estimation via small convolutional neural networks," *43rd Annual International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC)*, 2021, pp. 1031-1034.
- **W. Wang**, P. Mohseni, K. Kilgore, and L. Najafizadeh, "PulseLab: An integrated and expandable toolbox for pulse wave velocity-based blood pressure estimation," *43rd Annual International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC)*, 2021, pp. 5654-5657.
- **W. Wang**, L. Zhu, F. Marefat, P. Mohseni, K. Kilgore, and L. Najafizadeh, "Photoplethysmography-based blood pressure estimation using deep learning," *54th Asilomar Conference on Signals, Systems, and Computers*, 2020, pp. 945-949.

PROFESSIONAL SERVICES

- **Conference Reviewer:**
IEEE Biomedical Circuits and Systems Conference (BIOCAS) 2021 & 2022
Annual International Conference of the IEEE Engineering in Medicine & Biology Society (EMBC) 2022

COURSE PROJECTS

- **Convex Optimization:** Experimental Comparisons of Convergence Robustness Between First Order Adaptive Learning Rate Optimizers Spring 2021
- **Introduction to Deep Learning:** Implementation of AdaBoost on LeNet-5 Spring 2021
- **Data Structure and Algorithms:** Solving Printed Circuit Board (PCB) Routing Problem Using Lee's and Hadlock's Maze Routing Algorithm Spring 2019

AWARDS

- Rutgers ECE Student Development Award May 2022
- People's Scholarship of China (Undergraduate, Annual, top 10%) December 2017 & 2018
- National Scholarship of China (Undergraduate, Annual, top 5%) November 2016

TECHNICAL SKILLS

- MATLAB® (script & GUI orientated)
- Python (PyTorch, TensorFlow, scikit-learn, NumPy)
- C++
- AutoCAD®