Mr. Cheng Guo

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EDUCATION

University of California, Berkeley — California, America
Master's in Electrical Engineering and Computer Science — 2021-2022
GPA: 4.0/4.0

Beijing Normal University — Beijing, China
Bachelor's in Electronic Information Science and Technology — 2016-2020
Overall GPA: 88.38/100, Rank：2/18

PUBLICATIONS

- **Cheng Guo;** Yujie Hu; Yifan Niu; Junqi Guo, A Novel Reading and Writing Posture Reminding System based on Kalman Filtering Preprocessing and Neural Network Classification, *2019 IEEE International Symposium on Measurement and Networking (IEEE M&N 2019)*
- Jianqi Zhang; Yifan Niu; Ludi Bai; **Cheng Guo**; Yujie Hu; Junqi Guo, Design and Implementation of a Face Recognition System Based on Edge Computing, *2019 International Conference on Electrical and Automation Technology, Network and Computer Engineering (EATNCE 2019*)
- Zehui Yu; Hang Zhao; **Cheng Guo**; Junqi Guo; Shifeng Zhang; Kangying Hu; Zhan Chen, A LSTM Network-based Learners' Monitoring Model for Academic Self-efficacy Evaluation Using EEG Signal Analysis, *2020 IEEE 5th International Conference on Big Data Analysis (ICBDA 2020)*
- **Cheng Guo**; Sajid Ahmed; Mohamed-Slim Alouini, Machine Learning Based Cross-database Model for Automatic Cardiovascular Disease Diagnosis, *ACM Transactions on Computing for Healthcare (HEALTH)* (submitted)

RESEARCH EXPERIENCE

Same- and Cross-Database Machine Learning Based ECG Signal Classification — Saudi Arabia
Visiting Student at **The King Abdullah University of Science & Technology** — 8/2020-1/2021

- Realized Electrocardiograph (ECG) classification using machine learning based algorithms.
- Applied Pan-Tompkins algorithm to extract the heartbeats from ECG signals.
- Extracted Autoregressive model coefficients combined with statistical parameters as sample features from separated heartbeats.
- Realized Same- and Cross-Database simulation using different machine learning algorithms respectively.
- Applied well trained classification model in real-time heartbeat classification of portable heartbeat detector developed by microcomputer.

Robot Vision Positioning Navigation-Chinese Academy of Science — Beijing, China
Research Assistant at **The National Laboratory of Pattern Recognition, Institute of Automation** — 4/2019-12/2019

- Changed code from Python to C++ to facilitate transplanting to the robot chip.
- Detected moving projects with moving background, extracted objects' motion information in the camera by gradient point-based optical flow, and systematically analyzed the optical flow distribution of the entire image using MATLAB.
- Innovatively used statistical features to distinguish foreground and background pixels, and compensated background images to obtain information of moving objects under the condition of camera movement.

Research on Sleep Stage Classification Based on Bioelectrical Signals-BNU Beijing, China
Signal Analyst 2/2019-5/2019

- Innovatively introduced the correlation between band-limited power time-courses (CBPT) of two signals from brain-computer interface research to realize the sleep stage classification. Implemented the fusion of electroencephalogram (EEG) and myoelectric (EMG) signals.
- Extracted a short-term component DFA α1 using Detrended fluctuation analysis (DFA) in HRV signal and calculated FWMA of the fast wave in the EEG signal, conducted correlational analysis of α1 and FWMA to obtain higher coefficient than the traditional method.
- Calculated the phase-locked value (PLV) in the case of a large number of electrodes, located several pairs of brain regions with a high degree of synchronization and regarded them as characteristic brain regions of sleep staging.

Arduino-based Reading and Writing Posture Reminding System Beijing, China
Circuit designer& programmer 10/2016-6/2018

- Led the design of a portable motion analyzer (posture reminding system) with a team of three. Conducted data collection using MPU-6050 tilt angel sensor and GY-VL53L0X distance sensor. Performed Kalman filtering on data collected from the body angle.
- Accurately classified human postures using Genetic Algorithm Optimized Neural Network. Enabled the analyzer to evaluate human motions and to produce advice on ergonomically conducive postures.

COMPETION EXPERIENCE

American College Students Mathematical Modeling Competition Beijing, China
Data Analyst & Algorithm developer 1/2019

- Processed data including eliminating useless data and calculating statistical indicators.
- Programmed in accordance with the requirement and designed a cellular automaton model to predict the distribution and changes of drug users in four states. Won the Meritorious Winner.

HONORS AND AWARDS

- UC Berkeley College of Engineering Fung Fellowship 3/2021
- China Electronics Technology Group Corporation (CETC) Academic First-class Scholarship (Top 1%) 6/2020
- Meritorious Winner (Top 10%), The Mathematical Contest in Modeling (MCM) 5/2019
- Excellent Student Award (Top 10%), BNU 12/2018
- Best group in National-level college students' innovation and entrepreneurship training program (Top 5%) 9/2018
- First Place (Top 1%), Beijing College Student Electronic Design Competition 7/2018
- Bronze Metal (Top 10%), BNU Innovation and Entrepreneurship Competition 7/2018

STANDARD TEST AND SKILLS

- TOEFL: 104(R:30/L:27/S:23/W:24) 7/6/2019
- GRE:327(V:157/Q:170) +AW:3.5 10/20/2019
- Certificate of Mandarin Level 1
- Interest: National second-level table tennis player, Swimming
- Programming languages: Python, C++, MATLAB, C