KEHONG LIU

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Xi'an, Shaanixi Province - 710126, China

EDUCATION

- **Xidian University (XDU)** *Sept. 2023 - Jun. 2026*
  M.Eng in Artificial Intelligence (major), College of Artificial Intelligence Xi'an, China
  - **GPA: 3.92**/4.00, **Ranking: 2**/180
  - **Advisor:** Prof. Shuiping Gou
  - Xidian University's Artificial Intelligence program ranked No.2 nationwide in the 2024 Soft Science China University Subject Ranking.

- **Xi'an University of Science and Technology (XUST)** *Sept. 2019 – Jun. 2023*
  B.E in Computer Science and Technology (major), College of Computer Science and Technology Xi'an, China
  - **GPA: 4.3**/5.0, **Ranking: 1**/133
  - Xi'an University of Science and Technology's Petroleum Engineering program received an A rating in the fifth round of evaluations by the Ministry of Education

PUBLICATIONS

[1] **Kehong Liu***, et al. PulseMamba: An Efficient Framework with Multi-Scale Fusion and Frequency Enhancement for Non-Contact Heart Rate Estimation
IEEE Transactions on Consumer Electronics (Under Review). **(SCI, JCR Q1)**

[2] Shuiping Gou, **Kehong Liu***, et al. Physiological Information-Guided Network for Heart Rate Estimation from Near-Infrared Facial Video. (Co-first author, * **means equal contribution**)
IEEE Transactions on Instrumentation & Measurement (Major Revision). **(SCI, JCR Q1)**

[3] **Kehong Liu**, Shuo Wu, Shuiping Gou, et al. Non-Contact Heart Rate Estimation From Photoplethysmography Using EEMD and Convolution-Transformer Network.
IEEE CIVEMSA (Accept). **(EI)**

[4] Xiaojian Liu, **Kehong Liu**. A Permission-Carrying Security Policy and Static Enforcement for Information Flows in Android Programs. (Student first author)
Computers & Security (Accept). **(SCI, JCR Q1)**

PROJECTS

- **RGB-based Non-contact Heart Rate Estimation from Facial Video** *Feb. 2023 - Today*
  Xidian University [GitHub]
  - Analyzed the features in time, frequency, and time-frequency domains with continuous wavelet transform, applying modules for facial region-of-interest (ROI) detection and tracking.
  - Developing robust deep learning models using structures like Mamba/KAN, specifically focused on tackling the challenge of signal noise introduced by head movements and fluctuating illumination.
  - Explored the remote heart rate measurement under realistic conditions, the results showing no significant difference in the inference times of the proposed method running with or without GPU. This work resulted in a journal submission.

- **Remote Physiological Signal Monitoring from Near-Infrared Videos** *Nov. 2024 - Today*
  SenseTime/Xidian University [GitHub]
  - Constructed an NIR facial video dataset under various lighting conditions and performed data analysis and processing
  - Developed a Transformer-based physiology-guided model to extract heart rate signals from near-infrared video, improving measurement accuracy in low-light environments.
  - Proposed a framework to extract multi-scale temporal features from rPPG signals and introduced domain-specific physiological characteristics to improve the model's robustness and generalization across different noises.

- **Multi-Organ Registration in Medical Imaging** *Sept. 2023 - Jun. 2024*
  Xidian University [GitHub]
  - Proposed a multi-level cross-modal large-deformation registration method based on organ segmentation and semantic masks to address severe soft tissue deformation and large intensity differences in multi-modal registration.
  - Developed a multi-task learning framework that jointly performs medical image registration and segmentation, leveraging segmentation information to refine registration results while improving segmentation accuracy through registration.
  - Incorporated a cross-attention mechanism to effectively capture global and local features from both fixed and moving images during registration.

- **Android Malware Detection based on Machine Learning** *Dec. 2020 – Dec. 2022*
  Xi'an University of Science and Technology [GitHub]
  - Conducted Android application malicious detection by using static and dynamic analysis methods. Utilize Soot framework and FlowDroid tool to analyze the data flow graph of Android applications.
  - Collected program permission features from Android applications and construct them into feature vectors, then conduct multifamily classification by employing machine learning algorithms (i.e. Random Forest) to train a classifier model from sample dataset. This work resulted in a journal paper.

Experience

- **SenseTime-SenseCare Technology Co., Ltd. [Web]** *Sept. 2023 - Feb. 2024*
  Research Assistant Shanghai, China
  - Developed facial video-based physiological Datasets and worked in project to monitor physiological signal under low-light conditions.
  - Worked with Large Models in Medical Image, including preprocessing, annotation optimization, and model training.
  - Worked with the extraction of physiological signals from NIR videos, such as respiratory rate and blood oxygen levels, to improve overall health monitoring capabilities of deep-learning models.

Honors and Awards

- **First-Class Academic Scholarship for Graduate Students (Top 2%)** *2023/2024*
- **Outstanding Graduate Student (Top 2%)** *2024*
- **Outstanding Graduate of Shaanxi Province (Top 0.2%)** *2023*
- **Chinese National Scholarship (Top 1%)** *2022*
- **Excellent Undergraduate First-Class Scholarship (Top 1%)** *2020/2021/2022*

Skills

- **English:** IELTS: 7.0 (L: 8.0; R: 7.5; W: 6.5; S: 6.5), TOFEL: 105, CET-6: 601
- **Programming:** C/C++, Python (PyTorch, TensorFlow), LaTeX, MATLAB