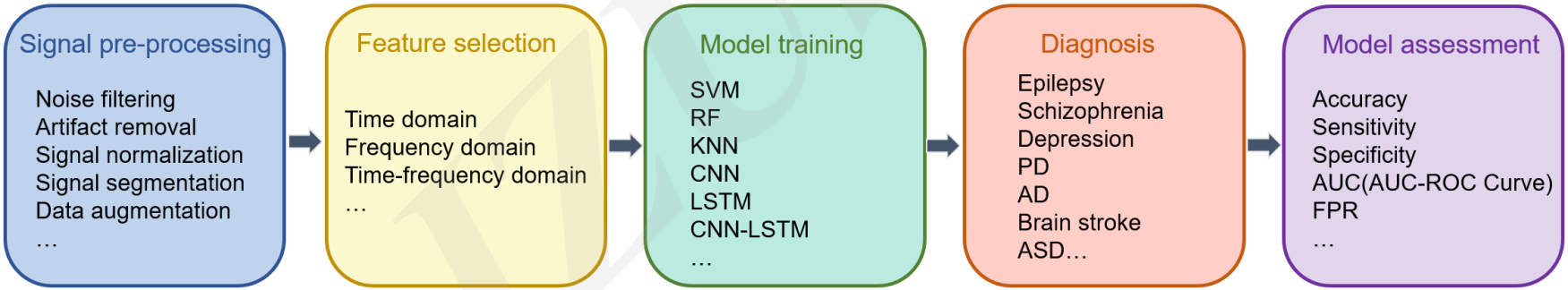
Cite this as: Shunuo SHANG, Yingqian SHI, Yajie ZHANG, Mengxue LIU, Hong ZHANG, Ping WANG, Liujing ZHUANG. Artificial intelligence for brain disease diagnosis using electroencephalogram signals[J]. Journal of Zhejiang University Science B, 2024, 25(10): 914-940.
http://doi.org/10.1631/jzus.B2400103

Artificial intelligence for brain disease diagnosis using electroencephalogram signals

Key words: **Brain disease; Electroencephalography; Brain-computer interface; Artificial intelligence**

Research Summary

This review investigates the application of AI in EEG-based brain disease diagnosis, including seven brain disorders, namely epilepsy, schizophrenia, depression, Parkinson's disease (PD), Alzheimer's disease (AD), brain stroke, and autism spectrum disorder (ASD).



Innovation points

- **Introduction** of the EEG acquisition methods, different EEG signal patterns and common AI techniques for brain disease diagnosis.

- **Summary** of the most updated research progress about AI approaches for brain disease diagnosis using EEG signals.

- **Emphasis** of advancements and challenges in AI auxiliary EEG diagnosis of brain diseases.

JZUS-B

Figure 4

Innovation points

A series of comprehensive tables were generated to summarize the latest knowledge about EEG-based brain disease diagnosis using AI techniques.

Table 1 | Summary of EEG-based epilepsy diagnosis.

Table 2 | Summary of EEG-based schizophrenia diagnosis.

Table 3 | Summary of EEG-based depression diagnosis.

Table 4 | Summary of EEG-based PD diagnosis.

Table 5 | Summary of EEG-based AD diagnosis.

Table 6 | Summary of EEG-based brain stroke diagnosis.

Table 7 | Summary of EEG-based ASD diagnosis.