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| Title, year and link | Database description | Type of diseases | Method(s) used | Outcome | Limitations and future work |
| Abnormal gait detection by means of LSTM, 2020, https://core.ac.uk/download/pdf/334419618.pdf | Database not released, data is generated by observing the coordinates of 25 reference points and then performing augmentation on them | Parkinson, hemiplegia,  Spastic diplegia (cerebral palsy) | Kinect V2 for skeleton capture with 25 reference point, converted in sequential data in terms of coordinate of various joints, LSTM with FNN | 98.1% accuracy on dataset, with average 0.02s inference time | - Other method of generating data from the 25 reference points  - Additional gait patterns (myopathic, ataxic or sensory gait) |
| Real-time Streaming of Gait Assessment for Parkinson’s Disease, 2021, https://dl.acm.org.remotexs.ntu.edu.sg/doi/pdf/10.1145/3437963.3441701 | 1. **Gait in neurodegenerative disease database**: collection of force signals from under foot during walk and some time series data e.g. right stride interval  2. **Gait in Parkinson’s Disease**: collection of force signals from under foot | Parkinson | Bidirectional Gated Recurrent Unit | Not stated | Not stated |
| Deep Learning Identifies Digital Biomarkers for Self-Reported Parkinson’s Disease, 2020, https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7375444/ | 1. **DREAM mPower dataset:** collection of data from accelerometer and gyroscope from mobile phone of volunteers, divided into healthy group and PD group | Parkinson | Data augmentation of initial data, followed by a CNN, and model ensemble at the end | AUROC of 0.8558 on this dataset | - Model focuses more on detecting the tremor during the resting phase of the data  - Varied samples collected from a wider demographic |
| Machine‑learning-based children’s pathological gait classification with low‑cost gait‑recognition system, 2021, https://biomedical-engineering-online.biomedcentral.com/articles/10.1186/s12938-021-00898-0 | 30 sensors placed under the foot to collect signal data. Data available on request. | Abnormal gait in children (flat foot, toe-in, toe-out) | Signal data collection, followed by a fourier transform for feature extraction, then either PCA or LDA for feature reduction and then NN or SVM for classification | LDA + SVM with linear kernel reaches the highest average accuracy, 97.79% | - Poor performance when generalizing to unseen data, especially for toe-in and toe-out |
| Vision-based gait impairment analysis for aided diagnosis, 2018, https://link.springer.com/article/10.1007/s11517-018-1795-2 | 1. **INIT Dataset:** a set of binary silhouettes extracted from RGB videos, available upon signing of data form. | Abnormal gait | Proposal of several new features that can be extracted from a binary video. | - | - Usage of arm motions as a form of detection mechanism |
| Detection of Gait Abnormalities caused by Neurological Disorders, 2020, https://ieeexplore.ieee.org/document/9287163 | Custom dataset containing 258 videos of normal gait and mimicked abnormal gaits | Parkinson, hemiplegia, diplegia, choreiform | Skeleton extracted using AlphaPose, then select specific features to run ML algorithms on and generate predictions | Across the board accuracies in the range of 0.6-0.8 for various predictions | Not stated |
| Remote Pathological Gait Classification System, 2021, https://arxiv.org/abs/2105.01634 | 1. **GAIT-IST Dataset:** video sequences of 10 individuals with 360 gait sequences and 4 abnormal gaits  2. **GAIT-IT Dataset:** sequence of binary silhouettes, skeletons, GEIs and SEIs | Parkinson, hemiplegia, diplegia, neuropathic | Custom CNN architecture on either GEI or SEI | Better cross dataset result, accuracy at about 85% | - Processing multiple views simultaneously  - Analysing or incorporating other viewpoints |
| Using a Skeleton Gait Energy Image for Pathological Gait Classification, 2020, https://ieeexplore.ieee.org/document/9320181 | **GAIT-IST Dataset:** video sequences of 10 individuals with 360 gait sequences and 4 abnormal gaits | Parkinson, hemiplegia, diplegia, neuropathic | Paper directly preceding the previous entry, proposed SEI as a novel method, with VGG as feature extractor and LDA or SVM for classifier | Cross dataset result of about 76% in accuracy |  |
| Automatic Health Problem Detection from  Gait Videos Using Deep Neural Networks, 2019, https://arxiv.org/abs/1906.01480 | Private dataset | Parkinson, post stroke, orthopedic | Taking in video inputs, use hourglass network for 2d pose estimation, then estimate 3d pose using NN, Multiview fusion with vector manipulation.  Pass the 3d estimated body post time series to a classifier network for prediction. | A series of recall that decreases from 0.96 in healthy patients to 0.56 in orthopedic patients. Overall accuracy is 0.71. | - Include other pathological populations  - Add joint kinetics time series |
| Classification of Pathologies Using a Vision  Based Feature Extraction, 2017, https://link.springer.com/chapter/10.1007/978-3-319-67585-5\_28 | Private dataset | Parkinson, hemiplegia, diplegia, neuropathic | GEI for each gait cycle in sequence, PCA to reduce the components and then SVM for classification. Further enhancement provided by using a hierarchical classifier for specific classes that are easily confused with each other and using legs angle time series. | Overall accuracy of 74.66%, increase to 80% if using majority voting for entire sequence instead of classifying individual cycles | - Classify diplegic and parkinsonian  - Test CNN with GEI |
| Using transfer learning for  classification of gait pathologies, 2018, https://ieeexplore.ieee.org/document/8621302 | INIT, DAI and DAI2 dataset |  | GEI extracted, using VGG with finetuned layers on INIT dataset, then train a LDA classifier on DAI and DAI2 dataset. | Overall accuracy above 90% | - Small dataset, result is not meaningful |
| Normal and pathological gait classification LSTM model, 2019, https://www.sciencedirect.com/science/article/abs/pii/S0933365718305967 | MMGS Dataset: Dataset of skeletal joints obtained using Microsoft Kinetic V2 Data | Knee Rigidity, Limping | Lower limbs angle calculation from the set of joint data captured by Kinetics V2, feed into bi-directional LSTM ensemble for classification. | 82% accuracy | - Estimate clinical gait assessment indexes |

Ideas:

* Vision language grounding with VLMs for explanatory diagnosis
* Accepting multiple views for model
* Could pose estimation be incorporated to make it more accurate
* Using a different way to produce GEIs
* Artificial generation of new data for GEIs