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Paper 24	
Title:	Gait Analysis to Track Parkinson's Disease Evolution Using Reproducible Research Practices
Paper	
Author keywords:	Reproducible Research Parkinson Disease Health Monitoring Systems
EasyChair keyphrases:	gait analysis (180), parkinson disease (125), gait cycle (110), principal component analysis (110), signal processing (100), gait characteristic (70), stance phase (70), healthy subject (70), signal processing technique (63), vertical ground reaction force (60), euclidean distance (60), reproducible research (55), human gait (50), public database (50), parkinson disease evolution (47), reproducible research practice (47), biomechanical signal processing (47), accelerometer based gait analysis system (46), foot sensor (40), cross validation (40), principal component (40)
Topics:	Biomedical Signal and Image Processing and Machine Vision, Data Analysis and Knowledge Discovery, Decision Support and Recommendation Systems
Abstract:	A research work is called reproducible when all research artifacts as text, data, figure and code are available for independent researchers where they can reproduce the results. In this paper, we present a reproducible gait analysis to track Parkinson's Disease evolution by monitoring walking abnormalities. We applied Principal Component Analysis into gait data to detect user's abnormalities that may indicate the progression of Parkinson's Disease. We validated our approach with a public database of foot sensor data, which includes vertical ground reaction force records of subjects with healthy gait and Parkinson's Disease patients. We used the euclidean distance as data classifier. We reached a classification accuracy of 81.00% with leave-one-out cross-validation, what demonstrates the feasibility of our approach for tracking PD's symptoms based on user gait.
Time:	Jan 07, 20:04 GMT
Address:	Rua Coronel Alcides de Barros, 137 ap 902 Jatiuca Maceio, 57036480 Brazil

Authors						
first name	last name	email	country	organization	Web site	corresponding?
Leonardo	Medeiros	leonardomelomedeiros@copin.ufcg.edu.br	Brazil	Instituto Federal de Alagoas		✓
Hyggo	Almeida	hyggo@dsc.ufcg.edu.br	Brazil	Universidade Federal de Campina Grande		✓
Leandro	Da Silva	leandrodds@gmail.com	Brazil	Instituto de Computação - Universidade Federal de Alagoas	<a href="http://www.ic.ufal.br">http://www.ic.ufal.br</a>	✓
Mirko	Perkusich	mirko.perkusich@copin.ufcg.edu.br	Brazil	Signove Tecnologia S/A	<a href="http://www.signove.com">http://www.signove.com</a>	✓
Robert	Fischer	r@robertfischer.eu	Brazil	Instituto Federal de Alagoas		✓

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