



RESEARCH OUTPUTS 2020

Research Articles

Akinyelu, A & Blignaut, P. 2020. Convolutional neural network-based methods for eye gaze estimation: A survey. *IEEE Access*, 8(2020): 142581-142605. DOI:10.1109/ACCESS.2020.3013540.

Akinyelu, A.A., Ezugwu, A.E. & Adewumi, A.O. 2020. Ant colony optimization edge selection for support vector machine speed optimization. *Neural Computing & Applications* 32(2020): 11385-11417. DOI: 10.1007/s00521-019-04633-8.

Atsa'am, D.D., Wario, R., & Okpo, F.E. 2020. A new terrorism categorization based on casualties and consequences using hierarchical clustering. *Journal of Applied Security Research* 15(3): 369-384. DOI: 10.1080/19361610.2020.1769461.

Atsa'am, D.D., Wario, R., & Okpo, F.E. 2020. TerrorClassify: An algorithm for terror groups placement into hierarchical categories of casualties and consequences. *Journal of Applied Security Research* 15(4): 568-579. DOI: 10.1080/19361610.2020.1812475.

Beelders, T. & Bergh, L. 2020. The role that composition plays in determining how a viewer looks at landscape art. *Journal of Eye Movement Research* 13(2): 13. DOI: 10.16910/jemr.13.2.13.

Beelders, T & Kotzé, E. 2020. Augmenting the business intelligence lifestyle model with usability: using eye-tracking to discover the *why* of usability problems. *The Electronic Journal of Information Systems Evaluation* 23(1): 96-111. DOI: 10.34190/EJISE.20.23.1.007.

Bezuidenhout, R., Nel, W. & Burger, A. 2020. Nonlinear proof-of-work: Improving the energy efficiency of Bitcoin mining. *Journal of Construction Project Management and Innovation (JCPMI)* 10(1): 20-32. DOI: 10.36615/jcpmi.v0i1.351.

Botha, B., De Wet, L. & Botma, Y. 2020. Experts' review of a virtual environment for virtual clinical simulation in South Africa. *Computer Animation and Virtual Worlds* 2020: e1983. DOI: 10.1002/cav.1983.

Ezugwu, A.E., Adeleke, O.J., Viriri, S. & Akinyelu, A.A. 2020. A conceptual comparison of several metaheuristic algorithms on continuous optimization problems. *Neural Computing & Applications* 32(2020): 6207-6251. DOI: 10.1007/s00521-019-04132-w.

Gadebe, M.L. & Kogeda, O.P. 2020. A smartphone naïve Bayes human activity recognition using personalized datasets. *Journal of Advanced Computational Intelligence and Intelligent Informatics* 24(5): 685-702. DOI: 10.20965/jacii.2020.p0685.

Gadebe, M.L. & Kogeda, O.P. 2020. Top-K human activity recognition dataset. *International Journal of Interactive Mobile Technologies* 14(18): 69-85. DOI: 10.3991/ijim.v14i8.16965.

- Holmqvist, K. & Blignaut, P.** 2020. Small eye movements cannot be reliably measured by video-based P-CR eye-trackers. *Behaviour Research Methods* 52: 2098-2121. DOI: 10.3758/s13428-020-01363-x.
- Khomokhoana, P.J. & Nel, L.** 2020. Decoding the underlying cognitive processes and related support strategies utilized by expert instructors during source code comprehension. *South African Computer Journal* 32(2): 232-257. DOI: 10.18489/sacj.v32i2.811.
- Kotzé, E. & Senekal, B.** 2020. Automatic classification of social media reports on violent incidents in South Africa using machine learning. *South African Journal of Science* 116(3): 1-8. DOI: 10.17159/sajs.2020/6557.
- Kotzé, E. & Senekal, B.** 2020. Not just a language with white faces: Analysing #taalmonument on Instagram using machine learning. *The Journal for Transdisciplinary Research in Southern Africa* 16(1): 871. DOI: 10.4102/td.v16i1.871
- Lombard, W.A., Van Zyl, J.H. & Beelders, T.** 2020. Eye-tracking consumers' awareness of beef brands. *Agrekon Agricultural Economics Research, Policy and Practice in Southern Africa* 59(2): 156-168. DOI: 10.1080/03031853.2020.1715807.
- Niehorster, C., Zemblys, R., Beelders, T. & Holmqvist, K.** 2020. Characterising gaze position signals and synthesizing noise during fixations in eye-tracking data. *Behaviour Research Methods* online. DOI: 10.3758/s13428-020-01400-9.
- Niehorster, C., Zemblys, R. & Holmqvist, K.** 2020. Is apparent fixational drift in eye-tracking data due to filters or eyeball rotation? *Behaviour Research Methods* online. DOI: 10.3758/s13428-020-01414-3.
- Oriola, O. & Kotzé, E.** 2020. Evaluating machine learning techniques for detecting offensive and hate speech in South African tweets. *IEEE Access* 8: 21496-21509. DOI: 10.1109/ACCESS.2020.2968173.
- Oriola, O. & Kotzé, E.** 2020. Improved semi-supervised learning technique for automatic detection of South African abusive language on Twitter. *South African Computer Journal* 32(2): 1-24. DOI: 10.18499/sacj.v.32i2.847.
- Park, S.Y., Bacelar, C. E., & Holmqvist, K.** 2020. Dog eye movements are slower than human eye movements. *Journal of Eye Movement Research* 12(8): 1-20. DOI: 10.16910/jemr.12.8.4.
- Senekal, B.** 2020. 'n Hond, 'n hottentotsgot en literêre prestige: Instagram as rolspeler in die Afrikaanse literêre sisteem. *LitNet Akademies* 17(3): 211-240.
- Senekal, B.** 2020. 'n Ontleding van drie Suid-Afrikaanse uitgewerye (NB-Uitgewers, LAPA Uitgewers en Protea Boekhuis) se Instagram-plasings. *LitNet Akademies* 17(3): 59-81.
- Van Staden, C.J.** 2020. Die ontleding van sosiogramme om die impak van kooperatiewe basisgroepe op positiewe interafhanklikheid in klasverband te ondersoek. *Litnet Akademies* 17(2): 677-703.
- Zemblys, R., Niehorster, D. & Holmqvist, K.** 2020. Evaluating three approaches to binary event-level agreement scoring. A reply to Friedman (2020). *Behaviour Research Methods* online. DOI: 10.3758/s13428-020-01425-0.

Chapters in Books

- Beelders, T & Stott, A.** 2020. Eye movements during barking at print. In: *Visual impairment and blindness – what we know and what we have to know*. G. Lo Giudice & A. Catala (Eds). London: Intech Open Access. pp. 359-382.

Conference Proceedings

Ahishakiye, E., Wario, R., Mwangi, W. & Taremwa, D. 2020. Prediction of cervical cancer based on risk factors using ensemble factors. In: *IST-Africa 2020 Conference Proceedings*. Virtual conference Kampala, Uganda, 18-22 May 2020. M. Cunningham & P. Cunningham (Eds). IST-Africa Institute and IIMC. pp. 1-12.

Akinyelu, A.A. 2020. Bio-inspired technique for improving machine learning speed and big data processing. In: *Proceedings of 2020 International Joint Conference on Neural Networks (IJCNN)*. Glasgow, United Kingdom, 19-24 July 2020. A. Hussain, M. Polycarpou & X. Yao (Eds). IEEE. pp. 1-8.

Botha, B., De Wet, L. & Botma, Y. 2020. Usability of a foreign body object scenario in VR for Nursing Education. In: *2020 IEEE Conference on Virtual Reality and 3D User Interfaces Abstracts and Workshops (VRW)*, 20-26 March 2020. L. O'Connor (Ed). IEEE Computer Society, Los Alamitos. pp. 787-788.

Chikoore, R., Kogeda, O.P. & Ojo, S.O. 2020. Recent approaches to drift effect in credit rating models. In: *International Conference on e-Infrastructure and e-Services for Developing Countries (AFRICOMM) 2019. Porto-Novo, Benin, 3-4 December 2019. Lecture Notes of the Institute for Computer Sciences, Social Informatics and Telecommunications Engineering 2020*. R. Zitouni, M. Agueh, P. Hougue & H. Soude (Eds). Springer. pp. 237-253.

Holmqvist, K., Orbom, S.L., Miller, M., Kashenevsky, A., Shovman, M. & Greenlee, M.W. 2020. Validation of a prototype hybrid eye-tracker against the DPI and the Tobii Spectrum. In: *Proceedings of Eye Tracking Research & Applications (ETRA) Full Papers 2020*. Virtual conference, Stuttgart, Germany, 2-5 June 2020. S. Spencer (Ed). Association for Computing Machinery (ACM). pp. 1-9.

Khomokhoana, P.J. & Nel, L. 2020. Decoding source code comprehension: Bottlenecks experienced by senior Computer Science students. In: *ICT Education. 48th Annual Conference of the Southern African Computer Lecturers' Association (SACLA) 2019. Northern Drakensberg, South Africa, 15-17 July 2019. Communications in Computer and Information Science*. B. Tait, J. Kroeze & S. Gruner (Eds). Springer. pp. 17-32.

Kotzé, E., Senekal, B., & Daelemans, W. 2020. Exploring the classification of security events using sparse and dense representation of text. In: *Southern African Universities Power Engineering Conference/Robotics and Mechatronics/Pattern Recognition Association of South Africa (SAUPEC/RobMech/PRASA)*, Cape Town, South Africa, 5-6 November 2020. A. Patel (Ed). IEEE. pp. 143-148.

Lonergan, M.A., De Wet, L., & Burger, A.J. 2020. Technology as a tool to improve student understanding of assessment questions. In: *Advances in Usability, User Experience, Wearable and Assistive Technology. Conference on Applied Human Factors and Ergonomics AHFE 2020. San Diego, USA, 16-20 July 2020. Advances in Intelligent Systems and Computing (Vol 1217)*. T. Ahram, 7 C. Falcao (Eds). Springer, Cham. pp. 250-256.

Nel, W., De Wet, L. & Schall, R. 2020. Randomised controlled trial of the usability of major search engine (Google, Yahoo and Bing) when using ambiguous search queries. In: *Proceedings of the 4th International Conference on Computer-Human Interactions and Research and Applications (CHIRA 2020)*. Virtual conference, Budapest, Hungary, 5-6 November 2020 A. Holzinger, H. P. Silva, M. Helfert & L. Constantine (Eds). ScitePress, Portugal. pp. 1-10.

Nyaga, C. & Wario, R. 2020. A review of sign language hand gesture recognition algorithms. In: *Intelligent Systems and Computing (Vol 1213)*, San Diego, USA, 16-20 July 2020. I.L. Nunes (Ed). Springer. pp. 207-216.

Nyaga, C. & Wario, R. 2020. Towards a sign language hand gesture recognition design framework. In: *IST-Africa 2020 Conference Proceedings*, Virtual conference, Kampala, Uganda, 18-22 May 2020. M. Cunningham and P. Cunningham (Eds). IST-Africa Institute and IIMC. pp. 1-8.

Stott, A. & Stott, T. 2020. A word-level analysis of barking at print for English Second Language Texts. In: *Electronic Proceedings of the European Science Education Research Association (ESERA) 2019*

Conference, Bologna, Italy, 26-30 August 2019. G. Carvalho, V. Kind & F. Le Hebel (Eds). Alma Mater Studiorum, University of Bologna. pp. 251-260.

Vidmar, R., Kotzé, E. & Van der Merwe, T. 2020. The suggestion of design theory artefacts for e-Government in South Africa. In: *15th International Conference on Design Science Research in Information Systems and Technology. DESRIST 2020. University of Agder, Norway, 2-4 December 2020. Lecture Notes in Computer Science* (Vol 12388). S. Hofmann, O. Muller & M. Rossi (Eds). Springer. pp. 81-92.

Vidmar, R., Kotzé, E., Van der Merwe, T. & Mentz, J. 2020. An approach to design and evaluation of e-government theory for South Africa. In: *Proceedings of the 12th Annual Pre-ICIS SIG Glob-Dev Workshop*, Munich, Germany, 15-19 December 2019. S. Qureshi & M. Sein (Eds). AIS E-Library. pp. 1-26.

Vidmar, R., Kotzé, E., Van der Merwe, T. & Mentz, J. 2020. Proposed theory of e-government for South Africa. In: *Proceedings of the 11th International Development Informatics Association Conference (IDIAC)*, Macau, China, 25-27 March 2020. D. R. Junio & C. Koopman (Eds). United Nations University. pp. 26-41.