



## REFERENCES

- [1] S. Murnani, "A robust object selection technique in gaze gesture application using exponential moving average and hidden markov model," *Master's thesis*, 2020.
- [2] O. V. Komogortsev and A. Karpov, "Automated classification and scoring of smooth pursuit eye movements in the presence of fixations and saccades," *Behavior research methods*, vol. 45, no. 1, pp. 203–215, 2013.
- [3] J. Pekkanen and O. Lappi, "A new and general approach to signal denoising and eye movement classification based on segmented linear regression," *Scientific reports*, vol. 7, no. 1, p. 17726, 2017.
- [4] R. Andersson, L. Larsson, K. Holmqvist, M. Stridh, and M. Nyström, "One algorithm to rule them all? an evaluation and discussion of ten eye movement event-detection algorithms," *Behavior research methods*, vol. 49, no. 2, pp. 616–637, 2017.
- [5] "Insurance Quotes germs at the airport," <https://www.insurancequotes.com/health/germs-at-the-airport>, accessed: 2021-03-29.
- [6] H. Lei, Y. Li, S. Xiao, X. Yang, C. Lin, S. L. Norris, D. Wei, Z. Hu, and S. Ji, "Logistic growth of a surface contamination network and its role in disease spread," *Scientific reports*, vol. 7, no. 1, pp. 1–10, 2017.
- [7] J. A. Otter, S. Yezli, J. A. Salkeld, and G. L. French, "Evidence that contaminated surfaces contribute to the transmission of hospital pathogens and an overview of strategies to address contaminated surfaces in hospital settings," *American journal of infection control*, vol. 41, no. 5, pp. S6–S11, 2013.
- [8] "WHO coronavirus disease (covid-19) advice for the public," <https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public>, accessed: 2021-07-5.
- [9] M. Z. Iqbal and A. Campbell, "The emerging need for touchless interaction technologies," *Interactions*, vol. 27, no. 4, pp. 51–52, 2020.
- [10] "Intel the need for enabling touchless technologies," <https://www.intel.com/content/dam/www/public/us/en/documents/pdf/the-need-for-enabling-touchless-technologies-whitepaper.pdf>, accessed: 2021-03-30.
- [11] G. Tokazhanov, A. Tleuken, M. Guney, A. Turkyilmaz, and F. Karaca, "How is covid-19 experience transforming sustainability requirements of residential buildings? a review," *Sustainability*, vol. 12, no. 20, p. 8732, 2020.



- [12] J. Wang and G. Du, "Covid-19 may transmit through aerosol." *Irish journal of medical science*, 2020.
- [13] Z.-y. Ge, L.-m. Yang, J.-j. Xia, X.-h. Fu, and Y.-z. Zhang, "Possible aerosol transmission of covid-19 and special precautions in dentistry," *Journal of Zhejiang University-SCIENCE B*, vol. 21, no. 5, pp. 361–368, 2020.
- [14] H. Brignull and Y. Rogers, "Enticing people to interact with large public displays in public spaces." in *Interact*, vol. 3, 2003, pp. 17–24.
- [15] S. Stellmach and R. Dachsel, "Still looking: Investigating seamless gaze-supported selection, positioning, and manipulation of distant targets," in *Proceedings of the sigchi conference on human factors in computing systems*, 2013, pp. 285–294.
- [16] "Tobii how eye tracking can prevent the spread of germs," <https://blog.tobii.com/how-eye-tracking-can-prevent-the-spread-of-germs>, accessed: 2021-03-30.
- [17] A.-T. Karlberg, M. A. Bergström, A. Börje, K. Luthman, and J. L. G. Nilsson, "Allergic contact dermatitis—formation, structural requirements, and reactivity of skin sensitizers," *Chemical research in toxicology*, vol. 21, no. 1, pp. 53–69, 2008.
- [18] "Tobii Pro what is eye tracking?" <https://www.tobiipro.com/blog/what-is-eye-tracking>, accessed: 2021-03-30.
- [19] K. Holmqvist, M. Nyström, R. Andersson, R. Dewhurst, H. Jarodzka, and J. Van de Weijer, *Eye tracking: A comprehensive guide to methods and measures*. OUP Oxford, 2011.
- [20] G. W. Kao and M. J. Morrow, "The relationship of anticipatory smooth eye movement to smooth pursuit initiation," *Vision research*, vol. 34, no. 22, pp. 3027–3036, 1994.
- [21] A. Hyrskykari, H. Istance, and S. Vickers, "Gaze gestures or dwell-based interaction?" in *Proceedings of the Symposium on Eye Tracking Research and Applications*. ACM, 2012, pp. 229–232.
- [22] P. Majaranta and K. J. Rähkä, "Twenty years of eye typing: systems and design issues," in *ETRA*, vol. 2, 2002, pp. 15–22.
- [23] D. D. Salvucci and J. R. Anderson, "Intelligent gaze-added interfaces," in *Proceedings of the SIGCHI conference on Human Factors in Computing Systems*. ACM, 2000, pp. 273–280.
- [24] H. Drewes and A. Schmidt, "Interacting with the computer using gaze gestures," in *IFIP Conference on Human-Computer Interaction*. Springer, 2007, pp. 475–488.



- [25] C. Ware and H. H. Mikaelian, "An evaluation of an eye tracker as a device for computer input2," *Acm sigchi bulletin*, vol. 18, no. 4, pp. 183–188, 1987.
- [26] S. Stellmach, S. Stober, A. Nürnberger, and R. Dachsel, "Designing gaze-supported multimodal interactions for the exploration of large image collections," in *Proceedings of the 1st conference on novel gaze-controlled applications*. ACM, 2011, p. 1.
- [27] M. L. Dybdal, J. S. Agustin, and J. P. Hansen, "Gaze input for mobile devices by dwell and gestures," in *Proceedings of the Symposium on Eye Tracking Research and Applications*. ACM, 2012, pp. 225–228.
- [28] J. Kangas, D. Akkil, J. Rantala, P. Isokoski, P. Majaranta, and R. Raisamo, "Gaze gestures and haptic feedback in mobile devices," in *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*. ACM, 2014, pp. 435–438.
- [29] Y. Zhang, A. Bulling, and H. Gellersen, "Sideways: a gaze interface for spontaneous interaction with situated displays," in *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*. ACM, 2013, pp. 851–860.
- [30] Y. Zhang, J. Müller, M. K. Chong, A. Bulling, and H. Gellersen, "Gazehorizon: enabling passers-by to interact with public displays by gaze," in *Proceedings of the 2014 ACM International Joint Conference on Pervasive and Ubiquitous Computing*. ACM, 2014, pp. 559–563.
- [31] M. Vidal, A. Bulling, and H. Gellersen, "Pursuits: spontaneous interaction with displays based on smooth pursuit eye movement and moving targets," in *Proceedings of the 2013 ACM international joint conference on Pervasive and ubiquitous computing*. ACM, 2013, pp. 439–448.
- [32] M. Vidal, K. Pfeuffer, A. Bulling, and H. W. Gellersen, "Pursuits: eye-based interaction with moving targets," in *CHI'13 Extended Abstracts on Human Factors in Computing Systems*. ACM, 2013, pp. 3147–3150.
- [33] M. Vidal, A. Bulling, and H. Gellersen, "Pursuits: spontaneous eye-based interaction for dynamic interfaces," *GetMobile: Mobile Computing and Communications*, vol. 18, no. 4, pp. 8–10, 2015.
- [34] A. Esteves, E. Velloso, A. Bulling, and H. Gellersen, "Orbits: Gaze interaction for smart watches using smooth pursuit eye movements," in *Proceedings of the 28th annual ACM symposium on user interface software & technology*, 2015, pp. 457–466.
- [35] M. Khamis, F. Alt, and A. Bulling, "A field study on spontaneous gaze-based interaction with a public display using pursuits," in *Adjunct Proceedings of the 2015 ACM International Joint Conference on Pervasive and Ubiquitous*



*Computing and Proceedings of the 2015 ACM International Symposium on Wearable Computers.* ACM, 2015, pp. 863–872.

- [36] M. Khamis, O. Saltuk, A. Hang, K. Stolz, A. Bulling, and F. Alt, “Textpursuits: using text for pursuits-based interaction and calibration on public displays,” in *Proceedings of the 2016 ACM International Joint Conference on Pervasive and Ubiquitous Computing.* ACM, 2016, pp. 274–285.
- [37] Herlina, S. Wibirama, and I. Ardiyanto, “Similarity measures of object selection in interactive applications based on smooth pursuit eye movements,” in *2018 International Conference on Information and Communications Technology (ICOIACT).* IEEE, 2018, pp. 639–644.
- [38] S. Wibirama, S. Murnani, and N. A. Setiawan, “Spontaneous gaze gesture interaction in the presence of noises and various types of eye movements,” in *ACM Symposium on Eye Tracking Research and Applications*, 2020, pp. 1–5.
- [39] E. Velloso, F. L. Coutinho, A. Kurauchi, and C. H. Morimoto, “Circular orbits detection for gaze interaction using 2d correlation and profile matching algorithms,” in *Proceedings of the 2018 ACM Symposium on Eye Tracking Research & Applications*, 2018, pp. 1–9.
- [40] G. Lan, B. Heit, T. Scargill, and M. Gorlatova, “Gazegraph: graph-based few-shot cognitive context sensing from human visual behavior,” in *Proceedings of the 18th Conference on Embedded Networked Sensor Systems*, 2020, pp. 422–435.
- [41] O. V. Komogortsev, D. V. Gobert, S. Jayarathna, S. M. Gowda *et al.*, “Standardization of automated analyses of oculomotor fixation and saccadic behaviors,” *IEEE Transactions on Biomedical Engineering*, vol. 57, no. 11, pp. 2635–2645, 2010.
- [42] R. Zembly, D. C. Niehorster, O. Komogortsev, and K. Holmqvist, “Using machine learning to detect events in eye-tracking data,” *Behavior research methods*, vol. 50, no. 1, pp. 160–181, 2018.
- [43] M. Startsev, I. Agtzidis, and M. Dorr, “1d cnn with blstm for automated classification of fixations, saccades, and smooth pursuits,” *Behavior Research Methods*, vol. 51, no. 2, pp. 556–572, 2019.
- [44] A. D. Wilson, D. R. Collins, and G. P. Bingham, “Human movement coordination implicates relative direction as the information for relative phase,” *Experimental Brain Research*, vol. 165, no. 3, pp. 351–361, 2005.
- [45] J. Kangas, J. Rantala, D. Akkil, P. Isokoski, P. Majaranta, and R. Raisamo, “Vibrotactile stimulation of the head enables faster gaze gestures,” *International Journal of Human-Computer Studies*, vol. 98, pp. 62–71, 2017.



- [46] Y. Zhang, A. Bulling, and H. Gellersen, "Pupil-canthen-ratio: a calibration-free method for tracking horizontal gaze direction," in *Proceedings of the 2014 International Working Conference on Advanced Visual Interfaces*. ACM, 2014, pp. 129–132.
- [47] A. T. S. Carneiro, C. E. L. Elmadjian, C. Gonzales, F. L. Coutinho, and C. H. Morimoto, "Pursuitpass: A visual pursuit-based user authentication system," in *2019 32nd SIBGRAPI Conference on Graphics, Patterns and Images (SIBGRAPI)*. IEEE, 2019, pp. 226–233.
- [48] M. Carter, E. Velloso, J. Downs, A. Sellen, K. O'Hara, and F. Vetere, "Pathsync: Multi-user gestural interaction with touchless rhythmic path mimicry," in *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems*, 2016, pp. 3415–3427.
- [49] D. W. Hansen and Q. Ji, "In the eye of the beholder: A survey of models for eyes and gaze," *IEEE transactions on pattern analysis and machine intelligence*, vol. 32, no. 3, pp. 478–500, 2009.
- [50] C. H. Morimoto and M. R. Mimica, "Eye gaze tracking techniques for interactive applications," *Computer vision and image understanding*, vol. 98, no. 1, pp. 4–24, 2005.
- [51] "How do tobii eye trackers work?" <https://www.tobii.com/learn-and-support/learn/eye-tracking-essentials/how-do-tobii-eye-trackers-work/>, accessed: 2019-09-21.
- [52] R. Johnson, K. O'Hara, A. Sellen, C. Cousins, and A. Criminisi, "Exploring the potential for touchless interaction in image-guided interventional radiology," in *Proceedings of the SIGCHI Conference on Human Factors in Computing Systems*, 2011, pp. 3323–3332.
- [53] D. Michelis and J. Müller, "The audience funnel: Observations of gesture based interaction with multiple large displays in a city center," *Intl. Journal of Human-Computer Interaction*, vol. 27, no. 6, pp. 562–579, 2011.
- [54] "Brilliant linear time invariant systems," <https://brilliant.org/wiki/linear-time-invariant-systems/>, accessed: 2021-07-25.
- [55] A. Techet, "13.42 design principles for ocean vehicles," 2005. [Online]. Available: <http://web.mit.edu/13.42/www/handouts/reading-randomprocesses.pdf>
- [56] B. Sklar and F. J. Harris, *Digital communications: fundamentals and applications*. Prentice-hall Englewood Cliffs, NJ, 1988, vol. 2001.
- [57] F. Jin and F. Sattar, "Enhancement of recorded respiratory sound using signal processing techniques," in *Encyclopedia of Information Communication Technology*. IGI Global, 2009, pp. 291–300.



- [58] L. Larsson, “Event detection in eye-tracking data for use in applications with dynamic stimuli,” Ph.D. dissertation, Lund University, 2016.
- [59] D. Jurafsky and J. H. Martin, “Hidden markov model,” *Speech and Language Processing*, p. 1024, 2016.
- [60] J. Lazar, J. H. Feng, and H. Hochheiser, *Research methods in human-computer interaction*. Morgan Kaufmann, 2017.
- [61] “Laerd pearson product-moment correlation,” <https://statistics.laerd.com/statistical-guides/pearson-correlation-coefficient-statistical-guide-2.php>, accessed: 2021-06-21.
- [62] R. W. Bailey, *Human performance engineering designing high quality professional user interfaces for computer products, applications and systems*. Prentice-Hall, Inc., 1996.
- [63] I. S. MacKenzie, “Human-computer interaction: An empirical research perspective,” 2012.
- [64] M. Nyström and K. Holmqvist, “An adaptive algorithm for fixation, saccade, and glissade detection in eyetracking data,” *Behavior research methods*, vol. 42, no. 1, pp. 188–204, 2010.
- [65] A. H. Dar, A. S. Wagner, and M. Hanke, “Remodnav: Robust eye movement detection for natural viewing,” *BioRxiv*, p. 619254, 2020.
- [66] Y. Liu, C. Zhang, C. Lee, B.-S. Lee, and A. Q. Chen, “Gazetry: Swipe text typing using gaze,” in *Proceedings of the annual meeting of the australian special interest group for computer human interaction*, 2015, pp. 192–196.
- [67] A. Kurauchi, W. Feng, A. Joshi, C. Morimoto, and M. Betke, “Eyeswipe: Dwell-free text entry using gaze paths,” in *Proceedings of the 2016 CHI Conference on Human Factors in Computing Systems*, 2016, pp. 1952–1956.