

REFERENCES

- [1] A. Katsarou, S. Gudbjörnsdottir, A. Rawshani, D. Dabelea, E. Bonifacio, B. J. Anderson, L. M. Jacobsen, D. A. Schatz, and Å. Lernmark, “Type 1 diabetes mellitus,” *Nature reviews Disease primers*, vol. 3, no. 1, pp. 1–17, 2017.
- [2] Health.Gov.lk. National guideline for management of diabetes. [On-line]. Available: [extension://efaidnbmnnnibpcajpcglclefindmkaj/https://www.ncd.health.gov.lk/images/pdf/circulars/final_dm_DM_for_secondary_and_tertiary_health_care_providers_feb3rd.pdf](https://www.ncd.health.gov.lk/images/pdf/circulars/final_dm_DM_for_secondary_and_tertiary_health_care_providers_feb3rd.pdf)
- [3] news.lk. (2015) four-million-diabetics-in-sri-lanka. [On-line]. Available: <https://www.news.lk/news/business/item/5701-nearly-four-million-diabetics-insri-lanka>
- [4] R. A. DeFronzo, E. Ferrannini, L. Groop, R. R. Henry, W. H. Herman, J. J. Holst, F. B. Hu, C. R. Kahn, I. Raz, G. I. Shulman *et al.*, “Type 2 diabetes mellitus,” *Nature reviews Disease primers*, vol. 1, no. 1, pp. 1–22, 2015.
- [5] R. P. Rannan-Eliya, N. Wijemunige, P. Perera, Y. Kapuge, N. Gunawardana, C. Sigera, R. Jayatissa, H. Herath, A. Gamage, N. Weerawardena *et al.*, “Prevalence of diabetes and pre-diabetes in sri lanka: a new global hotspot—estimates from the sri lanka health and ageing survey 2018/2019,” *BMJ Open Diabetes Research and Care*, vol. 11, no. 1, p. e003160, 2023.
- [6] F. Chee and T. Fernando, *Closed-loop control of blood glucose*. Springer Science & Business Media, 2007, vol. 368.
- [7] G. Roglic, “Who global report on diabetes: A summary,” *International Journal of Noncommunicable Diseases*, vol. 1, no. 1, pp. 3–8, 2016.
- [8] C. M. Ripsin, H. Kang, and R. J. Urban, “Management of blood glucose in type 2 diabetes mellitus,” *American family physician*, vol. 79, no. 1, pp. 29–36, 2009.
- [9] E. Ahmad, S. Lim, R. Lamptey, D. R. Webb, and M. J. Davies, “Type 2 diabetes,” *The Lancet*, vol. 400, no. 10365, pp. 1803–1820, 2022.
- [10] C. Mettananda, U. Chathuranga, T. Rathnayake, N. Luke, and N. Meegodavidanage, “Glycaemic control and avenues for improvement among people with type 2 diabetes mellitus from rural sri lanka—a retrospective cohort study,” *The Lancet Regional Health-Southeast Asia*, vol. 12, 2023.
- [11] G. Freckmann, S. Pleus, M. Grady, S. Setford, and B. Levy, “Measures of accuracy for continuous glucose monitoring and blood glucose monitoring devices,” *Journal of diabetes science and technology*, vol. 13, no. 3, pp. 575–583, 2019.

- [12] G. Cappon, M. Vettoretti, G. Sparacino, and A. Facchinetti, “Continuous glucose monitoring sensors for diabetes management: a review of technologies and applications,” *Diabetes & metabolism journal*, vol. 43, no. 4, pp. 383–397, 2019.
- [13] J. G. Friedman, Z. Cardona Matos, E. D. Szmuiłowicz, and G. Aleppo, “Use of continuous glucose monitors to manage type 1 diabetes mellitus: progress, challenges, and recommendations,” *Pharmacogenomics and Personalized Medicine*, pp. 263–276, 2023.
- [14] S. I. Yum and J. Roe, “Capillary blood sampling for self-monitoring of blood glucose,” *Diabetes Technology & Therapeutics*, vol. 1, no. 1, pp. 29–37, 1999.
- [15] T. K. Mathew, M. Zubair, and P. Tadi, “Blood glucose control,” 2024.
- [16] M. Montagnana, M. Caputo, D. Giavarina, and G. Lippi, “Overview on self-monitoring of blood glucose,” *Clinica Chimica Acta*, vol. 402, no. 1-2, pp. 7–13, 2009.
- [17] S. Akhtar, A. Ali, M. Asghar, I. Hussain, and A. Sarwar, “Prevalence of type 2 diabetes and pre-diabetes in sri lanka: a systematic review and meta-analysis,” *BMJ open*, vol. 13, no. 8, p. e068445, 2023.
- [18] M. Langendam, Y. M. Luijf, L. Hooft, J. H. DeVries, A. H. Mudde, and R. J. Scholten, “Continuous glucose monitoring systems for type 1 diabetes mellitus,” *The Cochrane database of systematic reviews*, vol. 2012, no. 1, 2012.
- [19] G. Gunathilake, D. Kottahachchi, and S. Siyambalapitiya, “The drug compliance among patients with diabetes in sri lankan setting,” *Sri Lanka Journal of Diabetes Endocrinology and Metabolism*, vol. 7, no. 1, 2017.
- [20] R. Sergazinov, E. Chun, V. Rogovchenko, N. Fernandes, N. Kasman, and I. Gaynanova, “Glucobench: Curated list of continuous glucose monitoring datasets with prediction benchmarks,” *arXiv preprint arXiv:2410.05780*, 2024.
- [21] J. B. Ali, T. Hamdi, N. Fnaiech, V. Di Costanzo, F. Fnaiech, and J.-M. Ginoux, “Continuous blood glucose level prediction of type 1 diabetes based on artificial neural network,” *Biocybernetics and Biomedical Engineering*, vol. 38, no. 4, pp. 828–840, 2018.
- [22] G. Alfian, M. Syafrudin, M. Anshari, F. Benes, F. T. D. Atmaji, I. Fahrurrozi, A. F. Hidayatullah, and J. Rhee, “Blood glucose prediction model for type 1 diabetes based on artificial neural network with time-domain features,” *Biocybernetics and Biomedical Engineering*, vol. 40, no. 4, pp. 1586–1599, 2020.

- [23] K. Plis, R. Bunescu, C. Marling, J. Shubrook, and F. Schwartz, “A machine learning approach to predicting blood glucose levels for diabetes management,” in *Workshops at the Twenty-Eighth AAAI conference on artificial intelligence*. Citeseer, 2014.
- [24] I. Rodríguez-Rodríguez, I. Chatzigiannakis, J.-V. Rodríguez, M. Maranghi, M. Gentili, and M.-Á. Zamora-Izquierdo, “Utility of big data in predicting short-term blood glucose levels in type 1 diabetes mellitus through machine learning techniques,” *Sensors*, vol. 19, no. 20, p. 4482, 2019.
- [25] R. Bunescu, N. Struble, C. Marling, J. Shubrook, and F. Schwartz, “Blood glucose level prediction using physiological models and support vector regression,” in *2013 12th International Conference on Machine Learning and Applications*, vol. 1. IEEE, 2013, pp. 135–140.
- [26] M. Munoz-Organero, “Deep physiological model for blood glucose prediction in t1dm patients,” *Sensors*, vol. 20, no. 14, p. 3896, 2020.
- [27] A. Gani, A. V. Gribok, S. Rajaraman, W. K. Ward, and J. Reifman *, “Predicting subcutaneous glucose concentration in humans: Data-driven glucose modeling,” *IEEE Transactions on Biomedical Engineering*, vol. 56, no. 2, pp. 246–254, 2009.
- [28] J. Reifman, S. Rajaraman, A. Gribok, and W. K. Ward, “Predictive monitoring for improved management of glucose levels,” *Journal of diabetes science and technology*, vol. 1, no. 4, pp. 478–486, 2007.
- [29] F. Ståhl and R. Johansson, “Diabetes mellitus modeling and short-term prediction based on blood glucose measurements,” *Mathematical biosciences*, vol. 217, no. 2, pp. 101–117, 2009.
- [30] S. Mirshekarianbabaki, “Blood glucose level prediction via seamless incorporation of raw features using rnns,” Ph.D. dissertation, Ohio University, 2018.
- [31] S. L. Cichosz, M. H. Jensen, and O. Hejlesen, “Short-term prediction of future continuous glucose monitoring readings in type 1 diabetes: development and validation of a neural network regression model,” *International Journal of Medical Informatics*, vol. 151, p. 104472, 2021.
- [32] M. Jaloli and M. Cescon, “Long-term prediction of blood glucose levels in type 1 diabetes using a cnn-lstm-based deep neural network,” *Journal of Diabetes Science and Technology*, vol. 17, no. 6, pp. 1590–1601, 2023.

- [33] W. P. van Doorn, Y. D. Foreman, N. C. Schaper, H. H. Savelberg, A. Koster, C. J. van der Kallen, A. Wesselius, M. T. Schram, R. M. Henry, P. C. Dagnelie *et al.*, “Machine learning-based glucose prediction with use of continuous glucose and physical activity monitoring data: The maastricht study,” *PloS one*, vol. 16, no. 6, p. e0253125, 2021.
- [34] F. Prendin, S. Del Favero, M. Vettoretti, G. Sparacino, and A. Facchinetti, “Forecasting of glucose levels and hypoglycemic events: head-to-head comparison of linear and nonlinear data-driven algorithms based on continuous glucose monitoring data only,” *Sensors*, vol. 21, no. 5, p. 1647, 2021.
- [35] F. Pouwer, N. Kupper, and M. C. Adriaanse, “Does emotional stress cause type 2 diabetes mellitus? a review from the european depression in diabetes (edid) research consortium,” *Discovery medicine*, vol. 9, no. 45, pp. 112–118, 2010.
- [36] W. Wang, M. Tong, and M. Yu, “Blood glucose prediction with vmd and lstm optimized by improved particle swarm optimization,” *IEEE Access*, vol. 8, pp. 217 908–217 916, 2020.
- [37] L. Mazgouti and N. E. A. El Idrissi, “Comparative analysis of the performance of four learning models for predicting blood glucose levels in type 1 diabetic patients based on blood glucose measurements,” in *2023 10th International Conference on Wireless Networks and Mobile Communications (WINCOM)*. IEEE, 2023, pp. 1–7.
- [38] T. El Idriss, A. Idri, I. Abnane, and Z. Bakkoury, “Predicting blood glucose using an lstm neural network,” in *2019 Federated Conference on Computer Science and Information Systems (FedCSIS)*. IEEE, 2019, pp. 35–41.
- [39] Q. Sun, M. V. Jankovic, L. Bally, and S. G. Mougiakakou, “Predicting blood glucose with an lstm and bi-lstm based deep neural network,” in *2018 14th symposium on neural networks and applications (NEUREL)*. IEEE, 2018, pp. 1–5.
- [40] A. Aliberti, I. Pupillo, S. Terna, E. Macii, S. Di Cataldo, E. Patti, and A. Acquaviva, “A multi-patient data-driven approach to blood glucose prediction,” *IEEE Access*, vol. 7, pp. 69 311–69 325, 2019.
- [41] D. L. Duke, *Intelligent diabetes assistant: A telemedicine system for modeling and managing blood glucose*. Carnegie Mellon University, 2010.
- [42] C. Zecchin, A. Facchinetti, G. Sparacino, G. De Nicolao, and C. Cobelli, “Neural network incorporating meal information improves accuracy of short-time

- prediction of glucose concentration,” *IEEE transactions on biomedical engineering*, vol. 59, no. 6, pp. 1550–1560, 2012.
- [43] C. Marling, M. Wiley, R. Bunescu, J. Shubrook, and F. Schwartz, “Emerging applications for intelligent diabetes management,” *AI Magazine*, vol. 33, no. 2, pp. 67–67, 2012.
 - [44] E. Lehmann and T. Deutsch, “A physiological model of glucose-insulin interaction in type 1 diabetes mellitus,” *Journal of biomedical engineering*, vol. 14, no. 3, pp. 235–242, 1992.
 - [45] A. Z. Woldaregay, E. Årsand, S. Walderhaug, D. Albers, L. Mamykina, T. Botsis, and G. Hartvigsen, “Data-driven modeling and prediction of blood glucose dynamics: Machine learning applications in type 1 diabetes,” *Artificial intelligence in medicine*, vol. 98, pp. 109–134, 2019.
 - [46] S. M. Pappada, B. D. Cameron, P. M. Rosman, R. E. Bourey, T. J. Papadimos, W. Olorunto, and M. J. Borst, “Neural network-based real-time prediction of glucose in patients with insulin-dependent diabetes,” *Diabetes technology & therapeutics*, vol. 13, no. 2, pp. 135–141, 2011.
 - [47] H. Butt, I. Khosa, and M. A. Iftikhar, “Feature transformation for efficient blood glucose prediction in type 1 diabetes mellitus patients,” *Diagnostics*, vol. 13, no. 3, p. 340, 2023.
 - [48] C. F. Carvalho and Z. Liang, “Glucose prediction with long short-term memory (lstm) models in three distinct populations,” *Engineering Proceedings*, vol. 82, no. 1, p. 87, 2024.
 - [49] M. R. Vahedi, K. B. MacBride, W. Wunsik, Y. Kim, C. Fong, A. J. Padilla, M. Pourhomayoun, A. Zhong, S. Kulkarni, S. Arunachalam *et al.*, “Predicting glucose levels in patients with type1 diabetes based on physiological and activity data,” in *Proceedings of the 8th ACM MobiHoc 2018 Workshop on Pervasive Wireless Healthcare Workshop*, 2018, pp. 1–5.
 - [50] M. Sevil, M. Rashid, I. Hajizadeh, M. Park, L. Quinn, and A. Cinar, “Physical activity and psychological stress detection and assessment of their effects on glucose concentration predictions in diabetes management,” *IEEE Transactions on Biomedical Engineering*, vol. 68, no. 7, pp. 2251–2260, 2021.
 - [51] P. Kok, “Predicting blood glucose levels of diabetics using artificial neural networks,” *Research Assignment for Master of Science*, 2004.

- [52] D. J. Cox and L. Gonder-Frederick, “Major developments in behavioral diabetes research.” *Journal of consulting and clinical psychology*, vol. 60, no. 4, p. 628, 1992.
- [53] R. A. Hackett and A. Steptoe, “Type 2 diabetes mellitus and psychological stress—a modifiable risk factor,” *Nature Reviews Endocrinology*, vol. 13, no. 9, pp. 547–560, 2017.
- [54] S. Clement, S. S. Braithwaite, M. F. Magee, A. Ahmann, E. P. Smith, R. G. Schafer, I. B. Hirsch, and D. in Hospitals Writing Committee, “Management of diabetes and hyperglycemia in hospitals,” *Diabetes care*, vol. 27, no. 2, pp. 553–591, 2004.
- [55] A. E Duncan, “Hyperglycemia and perioperative glucose management,” *Current pharmaceutical design*, vol. 18, no. 38, pp. 6195–6203, 2012.
- [56] M. Kivimäki and A. Steptoe, “Effects of stress on the development and progression of cardiovascular disease,” *Nature Reviews Cardiology*, vol. 15, no. 4, pp. 215–229, 2018.
- [57] H. F. Ahmad, H. Mukhtar, H. Alaqail, M. Seliaman, and A. Alhumam, “Investigating health-related features and their impact on the prediction of diabetes using machine learning,” *Applied Sciences*, vol. 11, no. 3, p. 1173, 2021.
- [58] P. J. Talmud, A. D. Hingorani, J. A. Cooper, M. G. Marmot, E. J. Brunner, M. Kumari, M. Kivimäki, and S. E. Humphries, “Utility of genetic and non-genetic risk factors in prediction of type 2 diabetes: Whitehall ii prospective cohort study,” *Bmj*, vol. 340, 2010.
- [59] D. K. Chellappan, N. S. Sivam, K. X. Teoh, W. P. Leong, T. Z. Fui, K. Chooi, N. Khoo, F. J. Yi, J. Chellian, L. L. Cheng *et al.*, “Gene therapy and type 1 diabetes mellitus,” *Biomedicine & Pharmacotherapy*, vol. 108, pp. 1188–1200, 2018.
- [60] R. J. Sigal, G. P. Kenny, D. H. Wasserman, and C. Castaneda-Sceppa, “Physical activity/exercise and type 2 diabetes,” *Diabetes care*, vol. 27, no. 10, pp. 2518–2539, 2004.
- [61] J. S. Rana, T. Y. Li, J. E. Manson, and F. B. Hu, “Adiposity compared with physical inactivity and risk of type 2 diabetes in women,” *Diabetes care*, vol. 30, no. 1, pp. 53–58, 2007.
- [62] N. Caron, N. Peyrot, T. Caderby, C. Verkindt, and G. Dalleau, “Energy expenditure in people with diabetes mellitus: a review,” *Frontiers in nutrition*, vol. 3, p. 56, 2016.

- [63] A. D. Liese, X. Ma, D. M. Maahs, and J. L. Trilk, "Physical activity, sedentary behaviors, physical fitness, and their relation to health outcomes in youth with type 1 and type 2 diabetes: A review of the epidemiologic literature," *Journal of Sport and Health Science*, vol. 2, no. 1, pp. 21–38, 2013.
- [64] J. H. Park, J. H. Moon, H. J. Kim, M. H. Kong, and Y. H. Oh, "Sedentary lifestyle: overview of updated evidence of potential health risks," *Korean journal of family medicine*, vol. 41, no. 6, p. 365, 2020.
- [65] J. R. Jaggers, K. M. King, S. E. Watson, and K. A. Wintergerst, "Predicting nocturnal hypoglycemia with measures of physical activity intensity in adolescent athletes with type 1 diabetes," *Diabetes Technology & Therapeutics*, vol. 21, no. 7, pp. 406–408, 2019.
- [66] S. H. A. Faruqui, Y. Du, R. Meka, A. Alaeddini, C. Li, S. Shirinkam, and J. Wang, "Development of a deep learning model for dynamic forecasting of blood glucose level for type 2 diabetes mellitus: secondary analysis of a randomized controlled trial," *JMIR mHealth and uHealth*, vol. 7, no. 11, p. e14452, 2019.
- [67] G. N. Healy, D. W. Dunstan, J. Salmon, E. Cerin, J. E. Shaw, P. Z. Zimmet, and N. Owen, "Objectively measured light-intensity physical activity is independently associated with 2-h plasma glucose," *Diabetes care*, vol. 30, no. 6, pp. 1384–1389, 2007.
- [68] S. Ding and M. Schumacher, "Sensor monitoring of physical activity to improve glucose management in diabetic patients: a review," *Sensors*, vol. 16, no. 4, p. 589, 2016.
- [69] N. Ben Brahim, J. Place, E. Renard, and M. D. Breton, "Identification of main factors explaining glucose dynamics during and immediately after moderate exercise in patients with type 1 diabetes," *Journal of diabetes science and technology*, vol. 9, no. 6, pp. 1185–1191, 2015.
- [70] K. Zarkogianni, K. Mitsis, E. Litsa, M.-T. Arredondo, G. Fico, A. Fioravanti, and K. S. Nikita, "Comparative assessment of glucose prediction models for patients with type 1 diabetes mellitus applying sensors for glucose and physical activity monitoring," *Medical & biological engineering & computing*, vol. 53, pp. 1333–1343, 2015.
- [71] R. Jayasuriya, M. J. Pinidiyapathirage, R. Jayawardena, A. Kasturiratne, P. de Zoysa, P. Godamunne, S. Gamage, and A. Wickremasinghe, "Translational research for diabetes self-management in sri lanka: a randomized controlled trial," *Primary Care Diabetes*, vol. 9, no. 5, pp. 338–345, 2015.

- [72] J. McSharry, L. McGowan, A. Farmer, and D. French, “Perceptions and experiences of taking oral medications for the treatment of type 2 diabetes mellitus: a systematic review and meta-synthesis of qualitative studies,” *Diabetic Medicine*, vol. 33, no. 10, pp. 1330–1338, 2016.
- [73] E. Sanchez-Rangel and S. E. Inzucchi, “Metformin: clinical use in type 2 diabetes,” *Diabetologia*, vol. 60, pp. 1586–1593, 2017.
- [74] M. Foretz, B. Guigas, and B. Viollet, “Understanding the glucoregulatory mechanisms of metformin in type 2 diabetes mellitus,” *Nature Reviews Endocrinology*, vol. 15, no. 10, pp. 569–589, 2019.
- [75] N. P. Somasundaram, C. N. Wijeyaratne, S. De Silva, S. Siribaddana, U. Illangasekara, H. Rajaratnam, P. Katulanda, S. Bulugahapitiya, S. Siyambalapitiya, C. Antonypillai *et al.*, “Diabetes mellitus: glucose control,” 2013.
- [76] S. Kalra, A. Aamir, A. Raza, A. Das, A. A. Khan, D. Shrestha, M. F. Qureshi, M. Fariduddin, M. F. Pathan, F. Jawad *et al.*, “Place of sulfonylureas in the management of type 2 diabetes mellitus in south asia: A consensus statement,” *Indian journal of endocrinology and metabolism*, vol. 19, no. 5, pp. 577–596, 2015.
- [77] K. J. Palmer and R. N. Brogden, “Gliclazide: an update of its pharmacological properties and therapeutic efficacy in non-insulin-dependent diabetes mellitus,” *Drugs*, vol. 46, pp. 92–125, 1993.
- [78] R. C. O’Brien, M. Luo, N. Balazs, and J. Mercuri, “In vitro and in vivo antioxidant properties of gliclazide,” *Journal of Diabetes and its Complications*, vol. 14, no. 4, pp. 201–206, 2000.
- [79] M. Hanefeld, M. Cagatay, T. Petrowitsch, D. Neuser, D. Petzinna, and M. Rupp, “Acarbose reduces the risk for myocardial infarction in type 2 diabetic patients: meta-analysis of seven long-term studies,” *European heart journal*, vol. 25, no. 1, pp. 10–16, 2004.
- [80] R. Josse, J.-L. Chiasson, E. Ryan, D. Lau, S. Ross, J.-F. Yale, L. Leiter, P. Maheux, D. Tessier, T. Wolever *et al.*, “Acarbose in the treatment of elderly patients with type 2 diabetes,” *Diabetes research and clinical practice*, vol. 59, no. 1, pp. 37–42, 2003.
- [81] M. A. Abdul-Ghani, K. Williams, R. A. DeFronzo, and M. Stern, “What is the best predictor of future type 2 diabetes?” *Diabetes care*, vol. 30, no. 6, pp. 1544–1548, 2007.

- [82] B. Nakra and K. Chaudhry, *Instrumentation, Measurement And Analysis*. Tata McGraw-Hill, 2003. [Online]. Available: <https://books.google.lk/books?id=fT5UtQEACAAJ>
- [83] I. Muhammad and Z. Yan, “Supervised machine learning approaches: A survey.” *ICTACT Journal on Soft Computing*, vol. 5, no. 3, 2015.
- [84] Y. Marcus, R. Eldor, M. Yaron, S. Shaklai, M. Ish-Shalom, G. Shefer, N. Stern, N. Golan, A. Z. Dvir, O. Pele *et al.*, “Improving blood glucose level predictability using machine learning,” *Diabetes/Metabolism Research and Reviews*, vol. 36, no. 8, p. e3348, 2020.
- [85] T. O. Ayodele, “Machine learning overview,” *New Advances in Machine Learning*, vol. 2, no. 9-18, p. 16, 2010.
- [86] S. Oviedo, J. Vehí, R. Calm, and J. Armengol, “A review of personalized blood glucose prediction strategies for t1dm patients,” *International journal for numerical methods in biomedical engineering*, vol. 33, no. 6, p. e2833, 2017.
- [87] K. Liu, L. Li, Y. Ma, J. Jiang, Z. Liu, Z. Ye, S. Liu, C. Pu, C. Chen, Y. Wan *et al.*, “Machine learning models for blood glucose level prediction in patients with diabetes mellitus: systematic review and network meta-analysis,” *JMIR medical informatics*, vol. 11, no. 1, p. e47833, 2023.
- [88] S. Mirshekarian, H. Shen, R. Bunesco, and C. Marling, “Lstms and neural attention models for blood glucose prediction: Comparative experiments on real and synthetic data,” in *2019 41st annual international conference of the IEEE engineering in medicine and biology society (EMBC)*. IEEE, 2019, pp. 706–712.
- [89] Y. Ruan, A. Bellot, Z. Moysova, G. D. Tan, A. Lumb, J. Davies, M. Van Der Schaar, and R. Rea, “Predicting the risk of inpatient hypoglycemia with machine learning using electronic health records,” *Diabetes care*, vol. 43, no. 7, pp. 1504–1511, 2020.
- [90] T. Danne, R. Nimri, T. Battelino, R. M. Bergenstal, K. L. Close, J. H. DeVries, S. Garg, L. Heinemann, I. Hirsch, S. A. Amiel *et al.*, “International consensus on use of continuous glucose monitoring,” *Diabetes care*, vol. 40, no. 12, pp. 1631–1640, 2017.
- [91] J. Martinsson, A. Schliep, B. Eliasson, and O. Mogren, “Blood glucose prediction with variance estimation using recurrent neural networks,” *Journal of Healthcare Informatics Research*, vol. 4, pp. 1–18, 2020.

- [92] H. Nemat, H. Khadem, J. Elliott, and M. Benaissa, "Data-driven blood glucose level prediction in type 1 diabetes: a comprehensive comparative analysis," *Scientific reports*, vol. 14, no. 1, p. 21863, 2024.
- [93] I. Fox, L. Ang, M. Jaiswal, R. Pop-Busui, and J. Wiens, "Deep multi-output forecasting: Learning to accurately predict blood glucose trajectories," in *Proceedings of the 24th ACM SIGKDD international conference on knowledge discovery & data mining*, 2018, pp. 1387–1395.
- [94] F. Tena, O. Garnica, J. Lanchares, and J. I. Hidalgo, "Ensemble models of cutting-edge deep neural networks for blood glucose prediction in patients with diabetes," *Sensors*, vol. 21, no. 21, p. 7090, 2021.
- [95] M. F. Rabby, Y. Tu, M. I. Hossen, I. Lee, A. S. Maida, and X. Hei, "Stacked lstm based deep recurrent neural network with kalman smoothing for blood glucose prediction," *BMC Medical Informatics and Decision Making*, vol. 21, pp. 1–15, 2021.
- [96] L. B. H. M. R. E. S. R. EkhlaspourL, MondesirD, "Comparativeaccuracyof17point-of-careglucosemeters," *DiabetesSciTechnol*, pp. 558–566, 2017.
- [97] G. R. ISO *et al.*, "Quality management systems–requirements," *Vol SS-EN ISO*, vol. 9001, 2015.
- [98] N. Breitenbeck and A. Brown, "Accuracy assessment of a blood glucose monitoring system for self-testing with three test strip lots following iso 15197: 2013/en iso 15197: 2015," *Journal of Diabetes Science and Technology*, vol. 11, no. 4, pp. 854–855, 2017.
- [99] R. S. WEINSTOCK, G. ALEPPO, R. M. BERGENSTAL, W. A. FISHER, D. A. GREENWOOD, and L. A. YOUNG, "Blood glucose monitoring," 2020.
- [100] onetouch. Onetouch-verio-flex-system. [Online]. Available: https://support.onetouch.com/s/article/OneTouch-Verio-Flex-System-Accuracy?language=en_US
- [101] B. Solnica, J. W. Naskalski, and J. Sieradzki, "Analytical performance of glucometers used for routine glucose self-monitoring of diabetic patients," *Clinica Chimica Acta*, vol. 331, no. 1-2, pp. 29–35, 2003.
- [102] F. N. Cosmas and E. V. Mbugi, "Comparative performance of different glucometers for random glucose measurements in diabetic patients," 2024.

- [103] S. D. Fedaration. How to diagnose. [Online]. Available: <https://srilankadiabetesfederation.lk/how-to-diagnose.php>
- [104] R. Rannan-Eliya, N. Wijemunige, P. Perera, Y. Kapuge, N. Gunawardana, C. Sigera *et al.*, “Prevalence of diabetes and pre-diabetes in sri lanka: a new global hotspot-estimates from the sri lanka health and ageing survey 2018/2019. *bmj open diabetes res care*. 2023; 11 (1).”
- [105] D. Frankenfield, L. Roth-Yousey, C. Compher, E. A. W. Group *et al.*, “Comparison of predictive equations for resting metabolic rate in healthy nonobese and obese adults: a systematic review,” *Journal of the American Dietetic association*, vol. 105, no. 5, pp. 775–789, 2005.
- [106] R. Gougeon, M. Lamarche, J. Yale, and T. Venuta, “The prediction of resting energy expenditure in type 2 diabetes mellitus is improved by factoring for glycemia,” *International journal of obesity*, vol. 26, no. 12, pp. 1547–1552, 2002.
- [107] R. J. Sigal, G. P. Kenny, D. H. Wasserman, C. Castaneda-Sceppa, and R. D. White, “Physical activity/exercise and type 2 diabetes: a consensus statement from the american diabetes association,” *Diabetes care*, vol. 29, no. 6, pp. 1433–1438, 2006.
- [108] A. Pande, Y. Zeng, A. K. Das, P. Mohapatra, S. Miyamoto, E. Seto, E. K. Henricson, and J. J. Han, “Energy expenditure estimation with smartphone body sensors,” in *Proceedings of the 8th International Conference on Body Area Networks*, 2013, pp. 8–14.
- [109] M. de Figueiredo Ferreira, F. Detrano, G. M. d. O. Coelho, M. E. Barros, R. Serrão Lanzillotti, J. Firmino Nogueira Neto, E. S. Portella, H. Serrão Lanzillotti, E. d. A. Soares *et al.*, “Body composition and basal metabolic rate in women with type 2 diabetes mellitus,” *Journal of nutrition and metabolism*, vol. 2014, 2014.
- [110] C. Henry, “Basal metabolic rate studies in humans: measurement and development of new equations,” *Public health nutrition*, vol. 8, no. 7a, pp. 1133–1152, 2005.
- [111] L. M. Horie, M. C. Gonzalez, R. S. Torrinhas, I. Cecconello, and D. L. Waitzberg, “New specific equation to estimate resting energy expenditure in severely obese patients,” *Obesity*, vol. 19, no. 5, pp. 1090–1094, 2011.

- [112] J. Saur, H. Leweling, F. Trinkmann, J. Weissmann, M. Borggrefe, and J. J. Kaden, "Modification of the harris-benedict equation to predict the energy requirements of critically ill patients during mild therapeutic hypothermia," *in vivo*, vol. 22, no. 1, pp. 143–146, 2008.
- [113] K. Van Dessel, A. Verrijken, C. De Block, A. Verhaegen, F. Peiffer, L. Van Gaal, C. De Wachter, and E. Dirinck, "Basal metabolic rate using indirect calorimetry among individuals living with overweight or obesity: The accuracy of predictive equations for basal metabolic rate," *Clinical Nutrition ESPEN*, vol. 59, pp. 422–435, 2024.
- [114] B. Amirkalali, S. Hosseini, R. Heshmat, B. Larijani *et al.*, "Comparison of harris benedict and mifflin-st jeor equations with indirect calorimetry in evaluating resting energy expenditure," *Indian journal of medical sciences*, vol. 62, no. 7, pp. 283–290, 2008.
- [115] K. R. Westerterp, "Daily physical activity and ageing," *Current Opinion in Clinical Nutrition & Metabolic Care*, vol. 3, no. 6, pp. 485–488, 2000.
- [116] —, "Physical activity and physical activity induced energy expenditure in humans: measurement, determinants, and effects," *Frontiers in physiology*, vol. 4, p. 90, 2013.
- [117] M. Matshipi, K. D. Monyeke, and H. Kemper, "The relationship between physical activity and plasma glucose level amongst ellisras rural young adult males and females: Ellisras longitudinal study," *International Journal of Environmental Research and Public Health*, vol. 14, no. 2, p. 198, 2017.
- [118] B. T. Smith, *Pharmacology for nurses*. Jones & Bartlett Publishers, 2014.
- [119] S. Mirshekarian, R. Bunesco, C. Marling, and F. Schwartz, "Using lstms to learn physiological models of blood glucose behavior," in *2017 39th Annual international conference of the IEEE engineering in medicine and biology society (EMBC)*. IEEE, 2017, pp. 2887–2891.
- [120] M. Zhang, K. B. Flores, and H. T. Tran, "Deep learning and regression approaches to forecasting blood glucose levels for type 1 diabetes," *Biomedical Signal Processing and Control*, vol. 69, p. 102923, 2021.
- [121] Q. Zhao, J. Zhu, X. Shen, C. Lin, Y. Zhang, Y. Liang, B. Cao, J. Li, X. Liu, W. Rao *et al.*, "Chinese diabetes datasets for data-driven machine learning," *Scientific Data*, vol. 10, no. 1, p. 35, 2023.

- [122] T. Zhu, L. Kuang, C. Piao, J. Zeng, K. Li, and P. Georgiou, "Population-specific glucose prediction in diabetes care with transformer-based deep learning on the edge," *IEEE transactions on biomedical circuits and systems*, vol. 18, no. 2, pp. 236–246, 2024.
- [123] Y. Sun and P. Kosmas, "Integrating bayesian approaches and expert knowledge for forecasting continuous glucose monitoring values in type 2 diabetes mellitus," *IEEE Journal of Biomedical and Health Informatics*, 2024.
- [124] D.-Y. Kim, D.-S. Choi, A. R. Kang, J. Woo, Y. Han, S. W. Chun, and J. Kim, "Intelligent ensemble deep learning system for blood glucose prediction using genetic algorithms," *Complexity*, vol. 2022, no. 1, p. 7902418, 2022.
- [125] U. Krishnamoorthy, V. Karthika, M. Mathumitha, H. Panchal, V. K. S. Jatti, and A. Kumar, "Learned prediction of cholesterol and glucose using arima and lstm models—a comparison," *Results in Control and Optimization*, vol. 14, p. 100362, 2024.
- [126] E. I. Georga, V. C. Protopappas, and D. I. Fotiadis, "Glucose prediction in type 1 and type 2 diabetic patients using data driven techniques," *Knowledge-oriented applications in data mining*, pp. 277–296, 2011.
- [127] M. M. H. Shuvo and S. K. Islam, "Deep multitask learning by stacked long short-term memory for predicting personalized blood glucose concentration," *IEEE Journal of Biomedical and Health Informatics*, vol. 27, no. 3, pp. 1612–1623, 2023.
- [128] M. H. Lim, H. Chae, J. Yoon, and I. Shin, "A deep learning framework for virtual continuous glucose monitoring and glucose prediction based on life-log data," *Scientific Reports*, vol. 15, no. 1, pp. 1–15, 2025.
- [129] S. M. A. Zaidi, V. Chandola, M. Ibrahim, B. Romanski, L. D. Mastrandrea, and T. Singh, "Multi-step ahead predictive model for blood glucose concentrations of type-1 diabetic patients," *Scientific reports*, vol. 11, no. 1, p. 24332, 2021.
- [130] E. Afsaneh, A. Sharifdini, H. Ghazzaghi, and M. Z. Ghobadi, "Recent applications of machine learning and deep learning models in the prediction, diagnosis, and management of diabetes: a comprehensive review," *Diabetology & Metabolic Syndrome*, vol. 14, no. 1, p. 196, 2022.
- [131] M. M. H. Shuvo, T. Titirsha, G. L. Gonzalez, and S. K. Islam, "Enhancing personalized blood glucose prediction: Deep learning insights from ablation study on wearable sensor data," *IEEE Access*, 2024.

- [132] L. Barrea, C. Vetrani, M. Caprio, M. El Ghoch, E. Frias-Toral, R. J. Mehta, V. Mendez, E. Moriconi, S. A. Paschou, A. Pazderska *et al.*, “Nutritional management of type 2 diabetes in subjects with obesity: An international guideline for clinical practice,” *Critical Reviews in Food Science and Nutrition*, vol. 63, no. 16, pp. 2873–2885, 2023.