

DAFTAR PUSTAKA

- [1] R. P. M. Chan, K. A. Stol, and C. R. Halkyard, "Review of modelling and control of two-wheeled robots," *Annual reviews in control*, vol. 37, no. 1, pp. 89–103, 2013.
- [2] S. Miasa, M. Al-Mjali, A. A.-H. Ibrahim, and T. A. Tutunji, "Fuzzy control of a two-wheel balancing robot using dspic," in *2010 7th International Multi-Conference on Systems, Signals and Devices*. IEEE, 2010, pp. 1–6.
- [3] B. Mahler and J. Haase, "Mathematical model and control strategy of a two-wheeled self-balancing robot," in *IECON 2013-39th Annual Conference of the IEEE Industrial Electronics Society*. IEEE, 2013, pp. 4198–4203.
- [4] D. Clarke, "Pid algorithms and their computer implementation," *Transactions of the Institute of Measurement and Control*, vol. 6, no. 6, pp. 305–316, 1984.
- [5] Z.-Y. Zhao, M. Tomizuka, and S. Isaka, "Fuzzy gain scheduling of pid controllers," *IEEE transactions on systems, man, and cybernetics*, vol. 23, no. 5, pp. 1392–1398, 1993.
- [6] Y. Ha and S. Yuta, "Trajectory tracking control for navigation of self-contained mobile inverse pendulum," in *Proceedings of IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS'94)*, vol. 3. IEEE, 1994, pp. 1875–1882.
- [7] K. Pathak, J. Franch, and S. K. Agrawal, "Velocity and position control of a wheeled inverted pendulum by partial feedback linearization," *IEEE Transactions on robotics*, vol. 21, no. 3, pp. 505–513, 2005.
- [8] M. Alarfaj and G. Kantor, "Centrifugal force compensation of a two-wheeled balancing robot," in *2010 11th International Conference on Control Automation Robotics & Vision*. IEEE, 2010, pp. 2333–2338.
- [9] J. Jahaya, S. Nawawi, and Z. Ibrahim, "Multi input single output closed loop identification of two wheel inverted pendulum mobile robot," in *2011 IEEE Student Conference on Research and Development*. IEEE, 2011, pp. 138–143.
- [10] Q. Yong, L. Yanlong, Z. Xizhe, and L. Ji, "Balance control of two-wheeled self-balancing mobile robot based on ts fuzzy model," in *Proceedings of 2011 6th International Forum on Strategic Technology*, vol. 1. IEEE, 2011, pp. 406–409.

- [11] T. Docekal and S. Ozana, “Design of fuzzy controller for simple inverted pendulum,” in *2020 International Conference on Electrical, Communication, and Computer Engineering (ICECCE)*. IEEE, 2020, pp. 1–6.
- [12] F. Fahmizal, G. Setyawan, M. Arrofiq, and A. Mayub, “Logika fuzzy pada robot inverted pendulum beroda dua,” *J. Teknol. Inf. Dan Ilmu Komput*, vol. 4, no. 4, p. 244, 2017.
- [13] B. H. Prasetio, “Ensemble kalman filter and pid controller implementation on self balancing robot,” in *2015 International Electronics Symposium (IES)*. IEEE, 2015, pp. 105–109.
- [14] K. Prakash and K. Thomas, “Study of controllers for a two wheeled self-balancing robot,” in *2016 International Conference on Next Generation Intelligent Systems (ICNGIS)*. IEEE, 2016, pp. 1–7.
- [15] K. Kankhunthod, V. Kongratana, A. Numsomran, and V. Tipsuwanporn, “Self-balancing robot control using fractional-order pid controller,” 2019. [Online]. Available: <https://api.semanticscholar.org/CorpusID:204767301>
- [16] M. Majczak and P. Wawrzyński, “Comparison of two efficient control strategies for two-wheeled balancing robot,” in *2015 20th International Conference on Methods and Models in Automation and Robotics (MMAR)*. IEEE, 2015, pp. 744–749.
- [17] K. Yamafuji and T. Kawamura, “Study on the postural and driving control of a coaxial bicycle,” in *Meeting of Japan Society of Mechanical Engineering*, vol. 100, 1988, pp. 1114–1121.
- [18] Y.-S. Ha *et al.*, “Trajectory tracking control for navigation of the inverse pendulum type self-contained mobile robot,” *Robotics and autonomous systems*, vol. 17, no. 1-2, pp. 65–80, 1996.
- [19] N. Shiroma, O. Matsumoto, and K. Tani, “Cooperative behavior of a mechanically unstable mobile robot for object transportation,” *JSME International Journal Series C Mechanical Systems, Machine Elements and Manufacturing*, vol. 42, no. 4, pp. 965–973, 1999.
- [20] T.-H. Bui, T.-T. Nguyen, T.-L. Chung, and S.-B. Kim, “A simple nonlinear control of a two-wheeled welding mobile robot,” *International Journal of Control, Automation, and Systems*, vol. 1, no. 1, pp. 35–42, 2003.

- [21] K. Ogata, *Modern Control Engineering*, ser. Instrumentation and controls series. Prentice Hall, 2010. [Online]. Available: <https://books.google.co.id/books?id=Wu5GpNAelzkC>
- [22] A. Juditsky, H. Hjalmarsson, A. Benveniste, B. Delyon, L. Ljung, J. Sjöberg, and Q. Zhang, “Nonlinear black-box models in system identification: Mathematical foundations,” *Automatica*, vol. 31, no. 12, pp. 1725–1750, 1995.
- [23] L. Ljung, “System identification toolbox getting started guide,” Mar. 2024, [Online; accessed Jun 2024]. [Online]. Available: https://www.mathworks.com/help/pdf_doc/ident/ident_gs.pdf
- [24] A. K. Shaw, “Optimal estimation of the parameters of all-pole transfer functions,” *IEEE Transactions on Circuits and Systems II: Analog and Digital Signal Processing*, vol. 41, no. 2, pp. 140–150, 1994.
- [25] A. A. Ozdemir and S. Gumussoy, “Transfer function estimation in system identification toolbox via vector fitting,” *IFAC-PapersOnLine*, vol. 50, no. 1, pp. 6232–6237, 2017.
- [26] M. Silva, A. Ribeiro, M. Santos, M. Carmo, L. Honório, E. Oliveira, and V. Vidal, “Design of angular pid controllers for quadcopters built with low cost equipment,” in *2016 20th international conference on system theory, control and computing (ICSTCC)*. IEEE, 2016, pp. 216–221.
- [27] E. Ali and N. Aphiratsakun, “Au ball on plate balancing robot,” in *2015 IEEE International Conference on Robotics and Biomimetics (ROBIO)*. IEEE, 2015, pp. 2031–2034.
- [28] R. S. Martins and F. Nunes, “Control system for a self-balancing robot,” in *2017 4th Experiment@ International Conference (exp. at'17)*. IEEE, 2017, pp. 297–302.
- [29] R. P. Borase, D. Maghade, S. Sondkar, and S. Pawar, “A review of pid control, tuning methods and applications,” *International Journal of Dynamics and Control*, vol. 9, pp. 818–827, 2021.
- [30] C. Zhao and L. Guo, “Pid controller design for second order nonlinear uncertain systems,” *Science China Information Sciences*, vol. 60, pp. 1–13, 2017.
- [31] I. D. Díaz-Rodríguez, S. Han, L. Keel, and S. Bhattacharyya, “Advanced tuning for ziegler-nichols plants,” *IFAC-PapersOnLine*, vol. 50, no. 1, pp. 1805–1810, 2017.

- [32] F. Isdaryani, F. Feriyonika, and R. Ferdiansyah, "Comparison of ziegler-nichols and cohen coon tuning method for magnetic levitation control system," in *Journal of Physics: Conference Series*, vol. 1450, no. 1. IOP Publishing, 2020, p. 012033.
- [33] N. Kuyvenhoven, "Pid tuning methods an automatic pid tuning study with mathcad," *Calvin college ENGR*, vol. 315, 2002.
- [34] S. B. Joseph, E. G. Dada, A. Abidemi, D. O. Oyewola, and B. M. Khammas, "Metaheuristic algorithms for pid controller parameters tuning: Review, approaches and open problems," *Heliyon*, vol. 8, no. 5, 2022.
- [35] L. A. Zadeh, "Fuzzy sets," *Information and control*, vol. 8, no. 3, pp. 338–353, 1965.
- [36] Z. Omar, "Intelligent control of a ducted fan vtol uav with conventional control surfaces," Ph.D. dissertation, RMIT University, 2010.
- [37] S. Kusumadewi and H. Purnomo, "Aplikasi logika fuzzy untuk pendukung keputusan," *Yogyakarta: Graha Ilmu*, vol. 2, 2010.
- [38] K. L. Tang and R. J. Mulholland, "Comparing fuzzy logic with classical controller designs," *IEEE Transactions on Systems, Man, and Cybernetics*, vol. 17, no. 6, pp. 1085–1087, 1987.
- [39] E. H. Mamdani and S. Assilian, "An experiment in linguistic synthesis with a fuzzy logic controller," *International journal of man-machine studies*, vol. 7, no. 1, pp. 1–13, 1975.
- [40] I. The MathWorks, "Simscape getting started guide," Mar. 2024, [Online; accessed Jun 2024]. [Online]. Available: https://www.mathworks.com/help/pdf_doc/simscape/simscape_gs.pdf
- [41] —, "Simscape multibody getting started guide," Mar. 2024, [Online; accessed Jun 2024]. [Online]. Available: https://www.mathworks.com/help/pdf_doc/sm/sm_gs.pdf
- [42] R. C. Ooi, "Balancing a two-wheeled autonomous robot," *University of Western Australia*, vol. 3, 2003.
- [43] E. H. Binugroho, D. Pratama, A. Z. R. Syahputra, and D. Pramadihanto, "Control for balancing line follower robot using discrete cascaded pid algorithm on adroit v1 education robot," in *2015 International Electronics Symposium (IES)*. IEEE, 2015, pp. 245–250.

- [44] D. Pratama, E. H. Binugroho, and F. Ardilla, “Movement control of two wheels balancing robot using cascaded pid controller,” in *2015 International Electronics Symposium (IES)*. IEEE, 2015, pp. 94–99.
- [45] H. Maghfiroh, J. S. Saputro, F. Fahmizal, and M. A. Baballe, “Adaptive fuzzy-pi for induction motor speed control,” *Journal of Fuzzy Systems and Control*, vol. 1, no. 1, pp. 1–5, 2023.