Appendix A

List of Publications

A.1 Journal papers

- V. Pandey, S. Kamal and S. Ghosh, "Finite-Time Discrete Control for Two-DOF Helicopter System," in IEEE Transactions on Circuits and Systems II: Express Briefs, vol. 71, no. 8, pp. 3800-3804, Aug. 2024, doi: 10.1109/TCSII.2024.3369681.

- Pandey, V.; Taslima, E.; Bartoszewicz, A.; Kamal, S.; Ghosh, S. Minimum Operator Based Data Driven Control. IEEE Transaction of Industrial Electronics.(Accepted)

- Pandey, V.; Taslima, E.; Bartoszewicz, A.; Kamal, S.; Ghosh, S. Prescribed Performance-Based Data-Driven Control Using Minimum Operator For Discrete-Time Nonlinear Systems. (under review)

- Pandey, V.; Bandyopadhyay, B.; Kamal, S.; Ghosh, S.; Yu, X. Output Feedback Based Discrete-Time Sliding Mode Control Using Minima Operator. IEEE Transactions on Systems, Man, and Cybernetics (Under revision)

A.2 Conference papers

- Pandey, V., Kamal, S., & Ghosh, S. (2024, October). Discrete-Time Sliding Mode Controller For Magnetic Levitation System Using Minima Operator. In 2024 17th International Workshop on Variable Structure Systems (VSS) (pp. 69-74). IEEE.

- Pandey, V., Singh, V. K., Taslima, E., Kamal, S., & Ghosh, S. (2024, October).

Adaptive Switching Scheme Design Using Ceiling Function for Discrete-Time Sliding Mode Control. In 2024 17th International Workshop on Variable Structure Systems (VSS) (pp. 75-80). IEEE.

Bibliography

[1] Yinsong Wang and Mingdong Hou. Model-free adaptive integral terminal sliding mode predictive control for a class of discrete-time nonlinear systems. *ISA transactions*, 93:209–217, 2019.

[2] Parijat Prasun, Shyam Kamal, Andrzej Bartoszewicz, and Sandip Ghosh. Difference equation with minima-based discrete-time sliding mode control. *IEEE Transactions on Circuits and Systems II: Express Briefs*, 70(12):4404–4408, 2023.

[3] S. Janardhanan and B. Bandyopadhyay. Output feedback sliding-mode control for uncertain systems using fast output sampling technique. *IEEE Transactions on Industrial Electronics*, 53(5):1677–1682, October 2006.

[4] Andrzej Bartoszewicz. Remarks on discrete-time variable structure control systems. *IEEE Transactions on Industrial Electronics*, 43:235–238, 1996.

[5] A. Bartoszewicz. Discrete-time quasi-sliding-mode control strategies. *IEEE Transactions on Industrial Electronics*, 45(4):633–637, 1998.

[6] Weibing Gao, Yufu Wang, and A. Homaifa. Discrete-time variable structure control systems. *IEEE Transactions on Industrial Electronics*, 42(2):117–122, 1995.

[7] Asif Chalanga, Shyam Kamal, Leonid M. Fridman, Bijnan Bandyopadhyay, and Jaime A. Moreno. Implementation of super-twisting control: Super-twisting and higher order sliding-mode observer-based approaches. *IEEE Transactions on Industrial Electronics*, 63(6):3677–3685, 2016.

[8] Vijay Kumar Singh, Shyam Kamal, and Sandip Ghosh. Predefined-time adaptive backstepping control for a class of nonlinear dynamical systems with parametric

uncertainties. *International Journal of Adaptive Control and Signal Processing*, 38(4):1242–1261, 2024.

[9] S. Kamal V. Pandey and S. Ghosh. Finite-time discrete control for two-dof helicopter system. *IEEE Transactions on Circuits and Systems II: Express Briefs*, 2024.

[10] Alma Y. Alanis, Edgar N. Sanchez, and Alexander G. Loukianov. Discrete-time adaptive backstepping nonlinear control via high-order neural networks. *IEEE Transactions on Neural Networks*, 18(4):1185–1195, 2007.

[11] Lin Zhao and Xinyu Song. Backstepping-based finite-time control for high-order discrete-time systems. *IEEE Transactions on Circuits and Systems II: Express Briefs*, 70(6):2127–2130, 2023.

[12] Derick Furquim Pereira, Francisco da Costa Lopes, and Edson H. Watanabe. Nonlinear model predictive control for the energy management of fuel cell hybrid electric vehicles in real time. *IEEE Transactions on Industrial Electronics*, 68(4):3213–3223, 2021.

[13] Antonio Sala. Integrating virtual reference feedback tuning into a unified closed-loop identification framework. *Automatica*, 43(1):178–183, 2007.

[14] Zhongsheng Hou, Ronghu Chi, and Huijun Gao. An overview of dynamic-linearization-based data-driven control and applications. *IEEE Transactions on Industrial Electronics*, 64(5):4076–4090, 2017.

[15] W.H. Wang and Z. S. Hou. An adaptive quasi-sliding mode control for nonlinear discrete-time system. In *2007 IEEE International Conference on Control and Automation*, pages 2504–2509, 2007.

[16] Zhongshegn Hou, Weidong Wang, and Shangtai Jin. Adaptive quasi-sliding-mode control for a class of nonlinear discrete-time systems. *Control Theory Applications*, 26(5):505–509, 2009.

[17] XF Wang, Xing Li, and JH Wang. Active interaction exercise control of exoskeleton upper limb rehabilitation robot using model-free adaptive methods. *Acta Automatica Sinica*, 42(12):1899–1914, 2016.

[18] Yongpeng Weng and Xianwen Gao. Data-driven robust output tracking control for gas collector pressure system of coke ovens. *IEEE Transactions on Industrial Electronics*, 64(5):4187–4198, 2016.

[19] Yongpeng Weng and Xianwen Gao. Adaptive sliding mode decoupling control with data-driven sliding surface for unknown MIMO nonlinear discrete systems. *Circuits, Systems, and Signal Processing*, 36:969–997, 2017.

[20] Wassim M Haddad and Junsoo Lee. Finite-time stability of discrete autonomous systems. *Automatica*, 122:109282, 2020.

[21] C. P. Bechlioulis and G. A. Rovithakis. Robust adaptive control of feedback linearizable mimo nonlinear systems with prescribed performance. *IEEE Transactions on Automatic Control*, 53(9):2090–2099, 2008.

[22] J. Zhang and G. Yang. Prescribed performance fault-tolerant control of uncertain nonlinear systems with unknown control directions. *IEEE Transactions on Automatic Control*, 62(12):6529–6535, 2017.

[23] Z. Hou and J. Shangtai. Data-driven model-free adaptive control for a class of mimo nonlinear discrete-time systems. *IEEE Transactions on Neural Networks*, 22(12):2173–2188, 2011.

[24] D. Liu, Y. J. Yang, and L. Y. Hao. Prescribed performance based data-driven adaptive sliding mode control for discrete-time nonlinear systems. *Journal of the Franklin Institute*, 361(4):106620, 2024.

[25] Vadim Utkin. Variable structure systems with sliding modes. *IEEE Transactions on Automatic Control*, 22(2):212–222, 1977.

[26] B. Huo L. Yin, Z. Deng and Y. Xia. Finite-time synchronization for chaotic gyros systems with terminal sliding mode control. *IEEE Transactions on Systems, Man, and Cybernetics: Systems*, 49(6):1131–1140, 2019.

[27] D. J. A. R. C. Milosavljevic. General conditions for existence of a quasi-sliding mode on the switching hyperplane in discrete variable structure systems. *Automatic Remote Control*, 46:307–314, 1985.

[28] Sergev V. Drakunov and V. I. Utkin. On discrete-time sliding modes. In *Nonlinear Control Systems Design*, pages 273–278. Pergamon, 1990.

[29] Katsuhisa Furuta. Sliding mode control of a discrete system. *Systems and Control Letters*, 14(2):145–152, 1990.

[30] B. Bandyopadhyay N. Xavier and X. Yu. Discrete time intermittent sliding mode control with multirate output feedback. In *IECON 2018 - 44th Annual Conference of the IEEE Industrial Electronics Society*, pages 2274–2279, 2018.

[31] S. Janardhanan and B. Bandyopadhyay. Multirate output feedback based robust quasi-sliding mode control of discrete-time systems. *IEEE Transactions on Automatic Control*, 52(3):499–503, 2007.

[32] Maria Thomas and Bijnan Bandyopadhyay. Discrete-time sliding mode control design for unicycle robot with bounded inputs. *IEEE Transactions on Circuits and Systems II: Express Briefs*, 68(8):2912–2916, 2021.

[33] Xue C. Yu X. Feng, Y. and F. Han. On a discrete-time quasi-sliding mode control. In *15th International Workshop on Variable Structure Systems (VSS)*, pages 251–254, 2018.

[34] A. Bartoszewicz and K. Adamiak. Discrete-time sliding-mode control with a desired switching variable generator. *IEEE Transactions on Automatic Control*, 65(4):1807–1814, 2020.

[35] A. Bartoszewicz and P. Leśniewski. New switching and nonswitching type reaching laws for smc of discrete time systems. *IEEE Transactions on Control Systems Technology*, 24(2):670–677, 2016.

[36] Herbert Werner. Robust control of a laboratory flight simulator by nondynamic multirate output feedback. In *35th IEEE Conference on Decision and Control*, volume 2, pages 1575–1580, 1996.

[37] B. Bandyopadhyay A. K. Behera and J. Reger. Discrete event-triggered sliding mode control with fast output sampling feedback. In *14th International Workshop on Variable Structure Systems (VSS)*, pages 148–153, 2016.

[38] K. Abidi, J.-X. Xu, and J.-H. She. A discrete-time terminal sliding-mode control approach applied to a motion control problem. *IEEE Transactions on Industrial Electronics*, 56(9):3619–3627, 2009.

[39] B. Bandyopadhyay and D. Fulwani. High-performance tracking controller for discrete plant using nonlinear sliding surface. *IEEE Transactions on Industrial Electronics*, 56(9):3628–3637, 2009.

[40] A. Bartoszewicz and K. Adamiak. Discrete-time sliding-mode control with a desired switching variable generator. *IEEE Transactions on Automatic Control*, 65(4):1807–1814, 2019.

[41] G. Bartolini, A. Ferrara, E. Usai, and V. I. Utkin. On multi-input chattering-free second-order sliding mode control. *IEEE Transactions on Automatic Control*, 45(9):1711–1717, 2000.

[42] A. Bartoszewicz and P. Latosiński. Discrete time sliding mode control with reduced switching–a new reaching law approach. *International Journal of Robust and Nonlinear Control*, 26(1):47–68, 2016.

[43] X. Liu, L. Liu, and Y. Wang. Minimum time state consensus for cooperative attack of multi-missile systems. *Aerospace Science and Technology*, 69:87–96, 2017.

[44] X. Chen, Y. Li, H. Ma, H. Tang, and Y. Xie. A novel variable exponential discrete-time sliding mode reaching law. *IEEE Transactions on Circuits and Systems II: Express Briefs*, 68(7):2518–2522, 2021.

[45] G. Monsees and J. M. A. Scherpen. Adaptive switching gain for a discrete-time sliding mode controller. *International Journal of Control*, 75(4):242–251, 2002.

[46] H. Salhi, S. Kamoun, N. Essounbouli, and A. Hamzaoui. Adaptive discrete-time sliding-mode control of nonlinear systems described by wiener models. *International Journal of Control*, 89(3):611–622, 2016.

[47] N. K. Sharma, S. Roy, and S. Janardhanan. New design methodology for adaptive switching gain based discrete-time sliding mode control. *International Journal of Control*, 94(4):1081–1088, 2021.

[48] Wassim M Haddad and VijaySekhar Chellaboina. *Nonlinear dynamical systems and control: a Lyapunov-based approach*. Princeton university press, 2008.

[49] Sébastien Gros and Mario Zanon. Data-driven economic nmpc using reinforcement learning. *IEEE Transactions on Automatic Control*, 65(2):636–648, 2020.

[50] P. Prasun, S. Kamal, S. Pandey, A. Bartoszewicz, and S. Ghosh. A minimum operator-based discrete-time sliding mode control. *IEEE Transactions on Automatic Control*, 69(11):7871–7876, November 2024.

[51] Zhongsheng Hou and Shangtai Jin. Data-driven model-free adaptive control for a class of MIMO nonlinear discrete-time systems. *IEEE Transactions on Neural Networks*, 22(12 PART 2):2173–2188, 2011.

[52] Meng Li, Yong Chen, and Ikram Ali. *Tracking Control of Networked Systems via Sliding-Mode*. Springer, 2022.

[53] Quanser. *Coupled Water Tanks Manual*. Markham, ON, Canada, 2012.

[54] Z. Hou, R. Chi, and H. Gao. An overview of dynamic-linearization-based data-driven control and applications. *IEEE Transactions on Industrial Electronics*, 64(5):4076–4090, 2017.

[55] C. Y. Tang and E. A. Misawa. Discrete variable structure control for linear multivariable systems: the state feedback case. In *Proceedings of the 1998 American Control Conference (ACC)*, page [Add page numbers if available]. IEEE, 1998.

[56] S. Janardhanan and B. Bandyopadhyay. Discrete sliding mode control of systems with unmatched uncertainty using multirate output feedback. *IEEE Transactions on Automatic Control*, 51(6):1030–1035, 2006.

[57] K. Adamiak and A. Bartoszewicz. Novel power-rate reaching law for quasi-sliding mode control. *Energies*, 15(15), 2022.

[58] S. Qu, X. Xia, and J. Zhang. Dynamics of discrete-time sliding-mode-control uncertain systems with a disturbance compensator. *IEEE Transactions on Industrial Electronics*, 61(7):3502–3510, 2014.

[59] R. Lozano. *Unmanned Aerial Vehicles: Embedded Control*. John Wiley & Sons, 2013.

[60] X. Xiong, A. K. Pal, Z. Liu, S. Kamal, R. Huang, and Y. Lou. Discrete-time adaptive super-twisting observer with predefined arbitrary convergence time. *IEEE Transactions on Circuits and Systems II: Express Briefs*, 68(6):2057–2061, 2020.

[61] M. Wang, Z. Wang, H. Dong, and Q. L. Han. A novel framework for backstepping-based control of discrete-time strict-feedback nonlinear systems with multiplicative noises. *IEEE Transactions on Automatic Control*, 66(4):1484–1496, 2020.

[62] M. Thomas and B. Bandyopadhyay. Discrete-time sliding mode control design for unicycle robot with bounded inputs. *IEEE Transactions on Circuits and Systems II: Express Briefs*, 68(8):2912–2916, 2021.

[63] M. Hernandez-Gonzalez, A. Y. Alanis, and E. A. Hernandez-Vargas. Decentralized discrete-time neural control for a quanser 2-dof helicopter. *Applied Soft Computing*, 12(8):2462–2469, 2012.

[64] Wassim M Haddad and Junsoo Lee. Finite-time stabilization and optimal feedback control for nonlinear discrete-time systems. *IEEE Transactions on Automatic Control*, 68(3):1685–1691, 2022.

[65] P. Prasun, S. Kamal, A. Bartoszewicz, and S. Ghosh. A difference equation with minima based reaching law for discrete variable structure systems. *IEEE Transactions on Circuits and Systems II: Express Briefs*, 2023.

[66] P. Prasun, S. Pandey, S. Kamal, S. Ghosh, and X. Xiong. A minimum operator based discrete-time super-twisting-like algorithm. *IEEE Transactions on Circuits and Systems II: Express Briefs*, 2023.

[67] V. K. Singh and S. Kamal. Prescribed-time adaptive backstepping control of an uncertain nonlinear 2-dof helicopter. *IEEE Transactions on Circuits and Systems II: Express Briefs*, 2023.

[68] V. K. Singh, S. Kamal, and S. Ghosh. Prescribed-time constrained feedback control for an uncertain twin rotor helicopter. *Aerospace Science and Technology*, 140:108483, 2023.

[69] N. Kazantzis and C. Kravaris. Time-discretization of nonlinear control systems via taylor methods. *Computers & Chemical Engineering*, 23(6):763–784, 1999.

[70] A. E. Hajjaji and M. Ouladsine. Modeling and nonlinear control of magnetic levitation systems. *IEEE Transactions on Industrial Electronics*, 48(4):831–838, 1996.

[71] W. Barie and L. Chiasson. Linear and nonlinear state-space controllers for magnetic levitation. *International Journal of Systems Science*, 27(11):1153–1163, 1996.

[72] Z. Zhang and X. Li. Real-time adaptive control of a magnetic levitation system with a large range of load disturbance. *Sensors*, 18(3):1512, 2018.

[73] C. H. Kim. Robust control of magnetic levitation systems considering disturbance force by lsm propulsion systems. *IEEE Transactions on Magnetics*, 53(11):1–5, 2017.

[74] J. de Jesús Rubio, L. Zhang, E. Lughofer, P. Cruz, A. Alsaedi, and T. Hayat. Modeling and control with neural networks for a magnetic levitation system. *Neurocomputing*, 227:113–121, 2017.

[75] M. Jalili-Kharaajoo, M. M. Tousi, H. Bagherzadeh, and A. E. Ashari. Sliding mode control of voltage-controlled magnetic levitation systems. In *Proceedings of 2003 IEEE Conference on Control Applications*, volume 1, pages 83–86, 2003.

[76] S. B. Vitthal and V. N. Pratik. Design of a discrete-time sliding mode controller for a magnetic levitation system using multirate output feedback. In *Proceedings of the 2010 American Control Conference*, pages 4289–4294, 2010.

[77] T. Schuhmann, W. Hofmann, and E. Fleischer. Potentials for reducing the power requirement of magnetic suspension systems by implementing a linear quadratic gaussian controller. In *2007 European Conference on Power Electronics and Applications*, pages 1–10, 2007.

[78] M. Komori and G. I. Kamogawa. Basic study of a magnetically levitated conveyer using superconducting magnetic levitation. *IEEE Transactions on Applied Superconductivity*, 15(2):2238–2241, 2005.

[79] S. Y. Lu and S. J. Chen. Design of a perturbation estimator using the theory of variable-structure systems and its application to magnetic levitation systems. *IEEE Transactions on Industrial Electronics*, 42(3):281–289, 1995.

[80] A. Goel and A. Swarup. Analysis of discrete time sliding mode control for a magnetic levitation system. *International Journal of Computer Applications (IJCA)*, ICNICT:26–32, 2023.

[81] B. H. Oza, T. Vishvjit, and B. Bandyopadhyay. Discrete time sliding mode control with application to magnetic levitation system. In *2010 11th International Workshop on Variable Structure Systems (VSS)*, pages 331–336, 2010.