# DAFTAR PUSTAKA

[1] Y. Khosiawan and I. Nielsen, "A system of uav application in indoor environment," *Production & Manufacturing Research*, vol. 4, no. 1, pp. 2–22, 2016.

[2] F. Nex and F. Remondino, "Uav for 3d mapping applications: a review," *Applied geomatics*, vol. 6, no. 1, pp. 1–15, 2014.

[3] V. Baiocchi, D. Dominici, and M. Mormile, "Uav application in post-seismic environment," *International Archives of the Photogrammetry, Remote Sensing and Spatial Information Sciences*, vol. 1, pp. 21–25, 2013.

[4] T. DJI, "Dji matrice 100 technical sheet." [Online]. Available: https://www.dji.com/id/matrice100/info

[5] W. Giernacki, M. Skwierczyński, W. Witwicki, P. Wroński, and P. Kozierski, "Crazyflie 2.0 quadrotor as a platform for research and education in robotics and control engineering," in *2017 22nd International Conference on Methods and Models in Automation and Robotics (MMAR)*. IEEE, 2017, pp. 37–42.

[6] J. Lin, L. Wang, F. Gao, S. Shen, and F. Zhang, "Flying through a narrow gap using neural network: an end-to-end planning and control approach," in *2019 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*. IEEE, 2019, pp. 3526–3533.

[7] D. Falanga, E. Mueggler, M. Faessler, and D. Scaramuzza, "Aggressive quadrotor flight through narrow gaps with onboard sensing and computing using active vision," in *2017 IEEE international conference on robotics and automation (ICRA)*. IEEE, 2017, pp. 5774–5781.

[8] D. Falanga, K. Kleber, S. Mintchev, D. Floreano, and D. Scaramuzza, "The foldable drone: A morphing quadrotor that can squeeze and fly," *IEEE Robotics and Automation Letters*, vol. 4, no. 2, pp. 209–216, 2018.

[9] V. Riviere, A. Manecy, and S. Viollet, "Agile robotic fliers: A morphing-based approach," *Soft robotics*, vol. 5, no. 5, pp. 541–553, 2018.

[10] N. Bucki and M. W. Mueller, "Design and control of a passively morphing quadcopter," in *2019 International Conference on Robotics and Automation (ICRA)*. IEEE, 2019, pp. 9116–9122.

[11] A. Visioli, *Practical PID control*. Springer Science & Business Media, 2006.

[12] Y. Li, Y. Qin, W. Xu, and F. Zhang, "Modeling, identification, and control of non-minimum phase dynamics of bi-copter uavs," in *2020 IEEE/ASME International Conference on Advanced Intelligent Mechatronics (AIM)*. IEEE, 2020, pp. 1249–1255.

[13] R. Büchi, *State Space Control, LQR and Observer: step by step introduction, with Matlab examples*. Books on Demand, 2010.

[14] Z. Bubnicki, *Modern control theory*. Springer, 2005.

[15] E. Hendricks, O. Jannerup, and P. H. Sørensen, *Linear systems control: deterministic and stochastic methods*. Springer, 2008.

[16] J.-Y. Hong, P.-J. Chiu, C.-D. Pong, and C.-Y. Lan, "Attitude and altitude control design and implementation of quadrotor using ni myrio," *Electronics*, vol. 12, no. 7, p. 1526, 2023.

[17] L. R. Newcome, *Unmanned aviation: a brief history of unmanned aerial vehicles*. Aiaa, 2004.

[18] F. Kendoul, "Survey of advances in guidance, navigation, and control of unmanned rotorcraft systems," *Journal of Field Robotics*, vol. 29, no. 2, pp. 315–378, 2012.

[19] C. Blouin and E. Lanteigne, "Pitch control of an oblique active tilting bi-rotor," in *2014 International Conference on Unmanned Aircraft Systems (ICUAS)*. IEEE, 2014, pp. 791–799.

[20] Z. Kong and Q. Lu, "Mathematical modeling and modal switching control of a novel tiltrotor uav," *Journal of Robotics*, vol. 2018, 2018.

[21] Q. Zhang, Z. Liu, J. Zhao, and S. Zhang, "Modeling and attitude control of bi-copter," in *2016 IEEE International Conference on Aircraft Utility Systems (AUS)*. IEEE, 2016, pp. 172–176.

[22] X. He and Y. Wang, "Design and trajectory tracking control of a new bi-copter uav," *IEEE Robotics and Automation Letters*, vol. 7, no. 4, pp. 9191–9198, 2022.

[23] G. He, L. Yu, S. Jia, and X. Wang, "Simulation verification of flight control of a tilt tri-rotor uav using x-plane," in *2020 39th Chinese Control Conference (CCC)*. IEEE, 2020, pp. 7008–7013.

[24] J. Wang, X. Teng, Z. Li, Q. Yu, and X. Liu, "A dual-fan aircraft use l-soat for pitch control: Modelling and simulation," in *2022 International Symposium on Control Engineering and Robotics (ISCER)*. IEEE, 2022, pp. 111–117.

[25] Z. Wang, R. Zu, D. Duan, and J. Li, "Tuning of adrc for qtr in transition process based on nbpo hybrid algorithm," *IEEE Access*, vol. 7, pp. 177 219–177 240, 2019.

[26] A. Hu, X. Zhao, and D. Xu, "Modeling and hovering control of 5-dof tilt-birotor robot," in *2020 16th International Conference on Control, Automation, Robotics and Vision (ICARCV)*. IEEE, 2020, pp. 572–577.

[27] B. Xian and W. Hao, "Nonlinear robust fault-tolerant control of the tilt trirotor uav under rear servo's stuck fault: Theory and experiments," *IEEE Transactions on Industrial Informatics*, vol. 15, no. 4, pp. 2158–2166, 2018.

[28] B. Li, L. Ma, D. Huang, and Y. Sun, "A flexibly assembled and maneuverable reconfigurable modular multi-rotor aerial vehicle," *IEEE/ASME Transactions on Mechatronics*, 2021.

[29] J. Yang, Y. Zhu, L. Zhang, Y. Dong, and Y. Ding, "Sytab: A class of smooth-transition hybrid terrestrial/aerial bicopters," *IEEE Robotics and Automation Letters*, vol. 7, no. 4, pp. 9199–9206, 2022.

[30] F. Kendoul, I. Fantoni, and R. Lozano, "Modeling and control of a small autonomous aircraft having two tilting rotors," *IEEE Transactions on Robotics*, vol. 22, no. 6, pp. 1297–1302, 2006.

[31] G. Flores, I. Lugo, and R. Lozano, "6-dof hovering controller design of the quad tiltrotor aircraft: Simulations and experiments," in *53rd IEEE conference on decision and control*. IEEE, 2014, pp. 6123–6128.

[32] C. Papachristos, K. Alexis, and A. Tzes, "Towards a high-end unmanned tri-tiltrotor: Design, modeling and hover control," in *2012 20th Mediterranean Conference on Control & Automation (MED)*. IEEE, 2012, pp. 1579–1584.

[33] C. Papachristos and K. Alexis, "Design and experimental attitude control of an unmanned tilt-rotor aerial vehicle," in *2011 15th International Conference on Advanced Robotics (ICAR)*. IEEE, 2011, pp. 465–470.

[34] Y. Qin, W. Xu, A. Lee, and F. Zhang, "Gemini: A compact yet efficient bi-copter uav for indoor applications," *IEEE Robotics and Automation Letters*, vol. 5, no. 2, pp. 3213–3220, 2020.

[35] Y. Qin, Y. Li, X. Wei, and F. Zhang, "Hybrid aerial-ground locomotion with a single passive wheel," in *2020 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*. IEEE, 2020, pp. 1371–1376.

[36] Y. Qin, N. Chen, Y. Cai, W. Xu, and F. Zhang, "Gemini ii: Design, modeling, and control of a compact yet efficient servoless bi-copter," *IEEE/ASME Transactions on Mechatronics*, 2022.

[37] S. Bai and P. Chirarattananon, "Splitflyer air: A modular quadcopter that disassembles into two bicopters mid-air," *IEEE/ASME Transactions on Mechatronics*, 2022.

[38] A. B. Chowdhury, A. Kulhare, and G. Raina, "A generalized control method for a tilt-rotor uav stabilization," in *2012 IEEE International Conference on Cyber Technology in Automation, Control, and Intelligent Systems (CYBER)*. IEEE, 2012, pp. 309–314.

[39] S. Panigrahi, Y. S. S. Krishna, and A. Thondiyath, "Design, analysis, and testing of a hybrid vtol tilt-rotor uav for increased endurance," *Sensors*, vol. 21, no. 18, p. 5987, 2021.

[40] V. Annamalai and T. Selvakumaran, "Design modelling and simulation of tri-tilt rotor uav," in *2020 IEEE International Conference for Innovation in Technology (INOCON)*. IEEE, 2020, pp. 1–5.

[41] N. Uddin, H. G. Harno, and R. A. Sasongko, "Altitude control system design of bicopter using lyapunov stability approach," in *2021 International Symposium on Electronics and Smart Devices (ISESD)*. IEEE, 2021, pp. 1–6.

[42] N. Uddin, H. G. Harno, A. Manurung, and M. Nasucha, "A pitch control system design for bicopter uavs," in *2021 8th International Conference on Information Technology, Computer and Electrical Engineering (ICITACEE)*. IEEE, 2021, pp. 57–62.

[43] A. Abedini, A. A. Bataleblu, and J. Roshanian, "Robust backstepping control of position and attitude for a bi-copter drone," in *2021 9th RSI International Conference on Robotics and Mechatronics (ICRoM)*. IEEE, 2021, pp. 425–432.

[44] M. Taherinezhad, A. Ramirez-Serrano, and A. Abedini, "Robust trajectory-tracking for a bi-copter drone using indi: A gain tuning multi-objective approach," *Robotics*, vol. 11, no. 5, p. 86, 2022.

[45] K. Muraoka, N. Okada, D. Kubo, and M. Sato, "Transition flight of quad tilt wing vtol uav," in *28th Congress of the International Council of the Aeronautical Sciences*, 2012, pp. 2012–11.

[46] A. Oosedo, S. Abiko, S. Narasaki, A. Kuno, A. Konno, and M. Uchiyama, "Large attitude change flight of a quad tilt rotor unmanned aerial vehicle," *Advanced Robotics*, vol. 30, no. 5, pp. 326–337, 2016.

[47] K. Kawasaki, Y. Motegi, M. Zhao, K. Okada, and M. Inaba, "Dual connected bi-copter with new wall trace locomotion feasibility that can fly at arbitrary tilt angle," in *2015 IEEE/RSJ International Conference on Intelligent Robots and Systems (IROS)*. IEEE, 2015, pp. 524–531.

[48] T. Anzai, Y. Kojio, T. Makabe, K. Okada, and M. Inaba, "Design and development of a flying humanoid robot platform with bi-copter flight unit," in *2020 IEEE-RAS 20th International Conference on Humanoid Robots (Humanoids)*. IEEE, 2021, pp. 69–75.

[49] C. Yoo, Y. Kang, and B. Park, "Hardware-in-the-loop test for fault diagnosis system of tilt rotor uav," in *2008 International Conference on Control, Automation and Systems*. IEEE, 2008, pp. 320–323.

[50] D. Lee, E. M. Lee, D. Choi, J. Choi, C. Tirtawardhana, and H. Myung, "M-bric: Design of mass-driven bi-rotor with rl-based intelligent controller," in *2022 19th International Conference on Ubiquitous Robots (UR)*. IEEE, 2022, pp. 103–108.

[51] R. G. Hernandez-Garcia and H. Rodriguez-Cortes, "Transition flight control of a cyclic tiltrotor uav based on the gain-scheduling strategy," in *2015 International Conference on Unmanned Aircraft Systems (ICUAS)*. IEEE, 2015, pp. 951–956.

[52] M. Umer, S. M. A. Kazmi, S. M. H. Askari, and I. A. Rana, "Design and modeling of vtol tri tilt-rotor aircraft," in *2018 15th International Conference on Smart Cities: Improving Quality of Life Using ICT & IoT (HONET-ICT)*. IEEE, 2018, pp. 1–5.

[53] A. Ryś, R. Czyba, and G. Szafrański, "Development of control system for an unmanned single tilt tri-rotor aerial vehicle," in *2014 International Conference on Unmanned Aircraft Systems (ICUAS)*. IEEE, 2014, pp. 1091–1098.

[54] A. Moutinho, E. Mateos, and F. Cunha, "The tilt-quadrotor: concept, modeling and identification," in *2015 IEEE International Conference on Autonomous Robot Systems and Competitions*. IEEE, 2015, pp. 156–161.

[55] Y. Govdeli, S. M. B. Muzaffar, R. Raj, B. Elhadidi, and E. Kayacan, "Unsteady aerodynamic modeling and control of pusher and tilt-rotor quadplane configurations," *Aerospace Science and Technology*, vol. 94, p. 105421, 2019.

[56] H. Bhardwaj, X. Cai, S. K. H. Win, and S. Foong, "Design, modeling and control of a two flight mode capable single wing rotorcraft with mid-air transition ability," *IEEE Robotics and Automation Letters*, vol. 7, no. 4, pp. 11 720–11 727, 2022.

[57] L. Hrečko, J. Slačka, and M. Halás, "Bicopter stabilization based on imu sensors," in *2015 20th International Conference on Process Control (PC)*. IEEE, 2015, pp. 192–197.

[58] S. Garcia-Nieto, J. Velasco-Carrau, F. Paredes-Valles, J. V. Salcedo, and R. Simarro, "Motion equations and attitude control in the vertical flight of a vtol bi-rotor uav," *Electronics*, vol. 8, no. 2, p. 208, 2019.

[59] E. Çetinsoy, S. Dikyar, C. Hançer, K. Oner, E. Sirimoglu, M. Unel, and M. Aksit, "Design and construction of a novel quad tilt-wing uav," *Mechatronics*, vol. 22, no. 6, pp. 723–745, 2012.

[60] Y. Yildiz, M. Unel, and A. E. Demirel, "Nonlinear hierarchical control of a quad tilt-wing uav: An adaptive control approach," *International journal of adaptive control and signal processing*, vol. 31, no. 9, pp. 1245–1264, 2017.

[61] Ö. B. Albayrak, Y. Ersan, A. S. Bağbaşı, A. T. Başaranoğlu, and K. B. Arıkan, "Design of a robotic bicopter," in *2019 7th International Conference on Control, Mechatronics and Automation (ICCMA)*. IEEE, 2019, pp. 98–103.

[62] M. M. de Almeida and G. V. Raffo, "Nonlinear control of a tiltrotor uav for load transportation," *IFAC-PapersOnLine*, vol. 48, no. 19, pp. 232–237, 2015.

[63] R. C. Nelson *et al.*, *Flight stability and automatic control*. WCB/McGraw Hill New York, 1998, vol. 2.

[64] W. Phillips, C. Hailey, and G. Gebert, "Review of attitude representations used for aircraft kinematics," *Journal of aircraft*, vol. 38, no. 4, pp. 718–737, 2001.

[65] A. S. Saeed, A. B. Younes, C. Cai, and G. Cai, "A survey of hybrid unmanned aerial vehicles," *Progress in Aerospace Sciences*, vol. 98, pp. 91–105, 2018.

[66] T. Ostermann, J. Holsten, Y. Dobrev, and D. Moormann, "Control concept of a tiltwing uav during low speed manoeuvring," in *Proceeding of the 28th International Congress of the Aeronautical Sciences: ICAS Brisbane, Australia*, vol. 1190, 2012.

[67] D. A. Ta, I. Fantoni, and R. Lozano, "Modeling and control of a convertible mini-uav," *IFAC Proceedings Volumes*, vol. 44, no. 1, pp. 1492–1497, 2011.

[68] C. Papachristos and A. Tzes, "Modeling and control simulation of an unmanned tilt tri-rotor aerial vehicle," in *2012 IEEE International Conference on Industrial Technology*. IEEE, 2012, pp. 840–845.

[69] P.-R. Bilodeau and F. Wong, "Modeling and control of a hovering mini tail-sitter," *International Journal of Micro Air Vehicles*, vol. 2, no. 4, pp. 211–220, 2010.

[70] J. Escareno, S. Salazar-Cruz, and R. Lozano, "Attitude stabilization of a convertible mini birotor," in *2006 IEEE Conference on Computer Aided Control System Design, 2006 IEEE International Conference on Control Applications, 2006 IEEE International Symposium on Intelligent Control*. IEEE, 2006, pp. 2202–2206.

[71] S. Yanguo and W. Huanjin, "Design of flight control system for a small unmanned tilt rotor aircraft," *Chinese Journal of Aeronautics*, vol. 22, no. 3, pp. 250–256, 2009.

[72] Y. Jung and D. H. Shim, "Development and application of controller for transition flight of tail-sitter uav," *Journal of Intelligent & Robotic Systems*, vol. 65, no. 1, pp. 137–152, 2012.

[73] T. Matsumoto, K. Kita, R. Suzuki, A. Oosedo, K. Go, Y. Hoshino, A. Konno, and M. Uchiyama, "A hovering control strategy for a tail-sitter vtol uav that increases stability against large disturbance," in *2010 IEEE international conference on robotics and automation*. IEEE, 2010, pp. 54–59.

[74] J. Willis, J. Johnson, and R. W. Beard, "State-dependent lqr control for a tilt-rotor uav," in *2020 American Control Conference (ACC)*. IEEE, 2020, pp. 4175–4181.

[75] P. Casau, D. Cabecinhas, and C. Silvestre, "Autonomous transition flight for a vertical take-off and landing aircraft," in *2011 50th IEEE Conference on Decision and Control and European Control Conference*. IEEE, 2011, pp. 3974–3979.

[76] S. Park, J. Bae, Y. Kim, and S. Kim, "Fault tolerant flight control system for the tilt-rotor uav," *Journal of the Franklin Institute*, vol. 350, no. 9, pp. 2535–2559, 2013.

[77] A. Houari, I. Bachir, D. K. Mohamed, and M. Kara-Mohamed, "Pid vs lqr controller for tilt rotor airplane," *International Journal of Electrical and Computer Engineering (IJECE)*, vol. 10, no. 6, pp. 6309–6318, 2020.

[78] M. Ryll, H. H. Bülthoff, and P. R. Giordano, "First flight tests for a quadrotor uav with tilting propellers," in *2013 IEEE International Conference on Robotics and Automation*. IEEE, 2013, pp. 295–302.

[79] Z. Chen and H. Jia, "Design of flight control system for a novel tilt-rotor uav," *Complexity*, vol. 2020, 2020.

[80] K. Benkhoud and S. Bouallègue, "Modeling and lqg controller design for a quad tilt-wing uav," in *Proceedings of the 3rd international conference on automation, control engineering and computer science (ACECS2016), Hammamet, March*, 2016, pp. 20–22.

[81] E. Barzanooni, K. Salahshoor, and A. Khaki-Sedigh, "Attitude flight control system design of uav using lqg\ltr multivariable control with noise and disturbance," in *2015 3rd RSI International Conference on Robotics and Mechatronics (ICROM)*. IEEE, 2015, pp. 188–193.

[82] K. Benkhoud, S. Bouallègue, and M. Ayadi, "Rapid control prototyping of a quad-tilt-wing unmanned aerial vehicle," in *2017 International Conference on Control, Automation and Diagnosis (ICCAD)*. IEEE, 2017, pp. 423–428.

[83] K. Benkhoud and S. Bouallègue, "Dynamics modeling and advanced metaheuristics based lqg controller design for a quad tilt wing uav," *International Journal of Dynamics and Control*, vol. 6, no. 2, pp. 630–651, 2018.

[84] R. Guardeño, M. J. López, and V. M. Sánchez, "Mimo pid controller tuning method for quadrotor based on lqr/lqg theory," *Robotics*, vol. 8, no. 2, p. 36, 2019.

[85] K. Nonami, F. Kendoul, S. Suzuki, W. Wang, D. Nakazawa, K. Nonami, F. Kendoul, S. Suzuki, W. Wang, and D. Nakazawa, "Autonomous control of a mini quadrotor vehicle using lqg controllers," *Autonomous flying robots: unmanned aerial vehicles and micro aerial vehicles*, pp. 61–76, 2010.

[86] N. B. Knoebel and T. W. McLain, "Adaptive quaternion control of a miniature tailsitter uav," in *2008 American Control Conference*. IEEE, 2008, pp. 2340–2345.

[87] A. B. Chowdhury, A. Kulhare, and G. Raina, "Back-stepping control strategy for stabilization of a tilt-rotor uav," in *2012 24th Chinese Control and Decision Conference (CCDC)*. IEEE, 2012, pp. 3475–3480.

[88] G. R. Flores-Colunga and R. Lozano-Leal, "A nonlinear control law for hover to level flight for the quad tilt-rotor uav," *IFAC Proceedings Volumes*, vol. 47, no. 3, pp. 11 055–11 059, 2014.

[89] M. A. Johnson and M. H. Moradi, *PID control*. Springer, 2005.

[90] N. S. Nise, *Control systems engineering*. John Wiley & Sons, 2020.

[91] Y. Sun, "Finding the scale factor to eliminate steady-state error." [Online]. Available: https://ctms.engin.umich.edu/CTMS/index.php?aux=Extras_rscale

[92] J.-J. E. Slotine, W. Li *et al.*, *Applied nonlinear control*. Prentice hall Englewood Cliffs, NJ, 1991, vol. 199, no. 1.

[93] G. Tao, *Adaptive control design and analysis*. John Wiley & Sons, 2003, vol. 37.

[94] G. N. P. Pratama, A. I. Cahyadi, and S. Herdjunanto, "Robust proportional-derivative control on so (3) for transporting quadrotor with load uncertainties," *International Journal of Computer Science*, vol. 45, no. 2, 2018.

[95] B. D. Anderson and J. B. Moore, *Optimal control: linear quadratic methods*. Courier Corporation, 2007.

[96] S. Skogestad and I. Postlethwaite, *Multivariable feedback control: analysis and design*. john Wiley & sons, 2005.

[97] K. J. Astrom, "Adaptive control around 1960," *IEEE Control Systems Magazine*, vol. 16, no. 3, pp. 44–49, 1996.

[98] H. K. Khalil, *Nonlinear control*. Pearson New York, 2015, vol. 406.

[99] N. J. Van Eck and L. Waltman, "Citation-based clustering of publications using citnetexplorer and vosviewer," *Scientometrics*, vol. 111, pp. 1053–1070, 2017.

[100] K. Ogata *et al.*, *Modern control engineering*. Prentice hall Upper Saddle River, NJ, 2010, vol. 5.

[101] P. Marantos, Y. Koveos, and K. J. Kyriakopoulos, "Uav state estimation using adaptive complementary filters," *IEEE Transactions on Control Systems Technology*, vol. 24, no. 4, pp. 1214–1226, 2015.

[102] H. Fourati, N. Manamanni, L. Afilal, and Y. Handrich, "Complementary observer for body segments motion capturing by inertial and magnetic sensors," *IEEE/ASME transactions on Mechatronics*, vol. 19, no. 1, pp. 149–157, 2012.

[103] C. M. Brigante, N. Abbate, A. Basile, A. C. Faulisi, and S. Sessa, "Towards miniaturization of a mems-based wearable motion capture system," *IEEE Transactions on industrial electronics*, vol. 58, no. 8, pp. 3234–3241, 2011.

[104] M.-D. Hua, G. Ducard, T. Hamel, R. Mahony, and K. Rudin, "Implementation of a nonlinear attitude estimator for aerial robotic vehicles," *IEEE Transactions on Control Systems Technology*, vol. 22, no. 1, pp. 201–213, 2013.

[105] H.-M. Oh and M.-Y. Kim, "Attitude tracking using an integrated inertial and optical navigation system for hand-held surgical instruments," in *2014 14th International Conference on Control, Automation and Systems (ICCAS 2014)*. IEEE, 2014, pp. 290–293.