Name	Kostiantyn Dergachov
Position, Department/Faculty	Head of the Department of Aircraft Control Systems"
Academic Degree, Academic Title	Candidate of Technical Sciences (Ph D), Senior Researcher
Email:	k.dergachov@khai.edu
Scopus Author ID:	57226382634
Web of Science ResearcherID:	X-7488-2019
ORCID iD:	0000-0002-6939-3100
Google Scholar:	https://scholar.google.com.ua/citations?user=a
ResearchGate:	https://www.researchgate.net/profile/Konstant Dergachov?ev=prf_overview

EDUCATION:

Basic education (university, major, year of graduation):

Master of Mathematical Methods of Automated Control Systems,
Kharkv Military University [01/09/1990 – 28/06/1995]

Postgraduate/Doctoral studies:

Senior Researcher in Armament and military equipment
Ministry of Education and Science of Ukraine [06/07/2003]

PhD in Armament and military equipment
Ministry of Education and Science, Youth and Sports of Ukraine [10/05/2000]

Additional training, certification programs:

Certificate of Participation in the online course:

WORK EXPERIENCE:

Professional Career (Workplace, Years, Position):

Head of Department of the Department of Aircraft control systems *National Aerospace University – Kharkiv Aviation Institute* [01/05/2017 – Current] Management of the department's activities, conducting scientific research, training scientific personnel, teaching students of the department, management of scientific and methodological work of the department's staff.

Associate Professor of the Department of Aircraft control systems *National Aerospace University – Kharkiv Aviation Institute* [10/07/2007 – 12/30/2017] research activity, teaching

Senior *Researcher* of the Department of Department of Design and Operation of Missile Systems, Joint Research Institute of the Armed Forces of Ukraine, Kharkiv Military University [09/01/2003 – 30/09/2007] research activity

Senior Lecturer of the Department of Design of aircraft structures
Kharkiv Military University [09/01/2000 – 31/08/2003] research activity, teaching

Assistance Professor of the Department of Design of aircraft structures
Kharkiv Military University [09/01/1999 – 31/08/2000] research activity, teaching

Service in the Armed Forces of Ukraine in various positions, (Cadet, Engineer, Adjunct, Assistance Professor, Senior Lecturer, Senior Researcher) [09/01/1990 – 10/1/2007]

Teaching Experience:

Head of Department of the Department of Aircraft control systems *National Aerospace University – Kharkiv Aviation Institute* [01/05/2017 – Current] Management of the department's activities, conducting scientific research, training scientific personnel, teaching students of the department, management of scientific and methodological work of the department's staff.

Associate Professor of the Department of Aircraft control systems *National Aerospace University – Kharkiv Aviation Institute* [10/07/2007 – 12/30/2017] research activity, teaching

Senior Lecturer of the Department of Design of aircraft structures
Kharkiv Military University [09/01/2000 – 31/08/2003] research activity, teaching

Assistance Professor of the Department of Design of aircraft structures
Kharkiv Military University [09/01/1999 – 31/08/2000] research activity, teaching

RESEARCH ACTIVITIES:

Main Research Areas:
Rational Control of Complex Technical Objects; Avionics; Computerized Technical Vision Systems; Mobile Navigation Robots with Technical Vision Systems

Number of Publications (Scopus, WoS, others):
Over 300 scientific publications, including indexed articles in Scopus and Web of Science databases; multiple conference proceedings and applied research outputs.

Monographs, Textbooks:
Co-author of 12 monographs and 15 textbooks in the fields of Rational Control of Technical Objects; Avionics; and Computerized Technical Vision Systems.

Participation in Scientific Conferences:
Regular participant (more 120) and speaker at international and national scientific conferences on control systems and avionics (Great Britain, Croatia, Czech Republic, Poland online forums).

TEACHING ACTIVITIES:

Courses Taught:
Fundamentals of Navigation, Fundamentals of Air Traffic Controls, Development of Robots and Devices on Microcomputers, Data analysis by Python, Intelligent Transport Systems.

Author Courses, Academic Programs:
Author of the course «Fundamentals of Navigation», «Data analysis by Python», «Intelligent Transport Systems».
Developer of academic content for «Fundamentals of Air Traffic Controls», «Development of Robots and Devices on Microcontrollers».
Contributor to interdisciplinary educational modules on control systems and avionics.

Methodological Materials, Textbooks:
Co-author of textbooks in the field of control systems and avionics.
Developed electronic resources and video materials for hybrid and online teaching (LMS: Pilot, Moodle, Mentor)

GRANTS AND PROJECTS:

Participation in International and National Projects:

Tempus project Nº 517374-1-2011-1-JPCR
Communication and Information technology for Improvement Safety and Efficiency of Traffic flows: EU-RU-UA Master and PhD Programs in Intelligent Transport Systems (CITISET) (project participant)
[10/10/2011 – 5/12/2015]

PROFESSIONAL ACHIEVEMENTS AND AWARDS:

Honorary Titles:

Winner of the professional skills competition "Icarus of Khai" [2009], [2013], [2016]
Diploma by the Kharkiv Regional Council, [2018]
Gratitude by the Kharkiv Regional Council, [2019]
Charter of the Kharkiv Regional Council [2020]
Gratitude of the head of the Kharkiv regional administration [2021]
Certificate of honor of the Kharkiv regional state administration [2023]
Certificate of Honor from the Kharkiv City Council [2024]
Gratitude from the Minister of Education and Science [2025]

Distinctions, Awards, Prizes:

Winner of the Unmanned Aviation Engineering Projects Contest, National Agency for Unmanned Aviation, National Aviation University, Ukraine, 2016

Membership in Professional Associations:

Member, Program Committee, International Symposium «Transport Problems», Katowice, Poland [2019 – Current]
Member, Sectoral Expert Council in the Field of Knowledge "Electronics and Telecommunications", National Agency for Education Quality, Kyiv, Ukraine, [2019 – Current]

SELECTED PUBLICATIONS:

Key Articles (Scopus, WoS, others):

K. Dergachov *et al.*, "GPS Usage Analysis for Angular Orientation Practical Tasks Solving," *2022 IEEE 9th International Conference on Problems of Infocommunications, Science and Technology (PIC S&T)*, Kharkiv, Ukraine, 2022, pp. 187-192, doi: 10.1109/PICST57299.2022.10238629.

K. Dergachov, S. Bahinskii and I. Piavka, "The Algorithm of UAV Automatic Landing System Using Computer Vision," 2020 IEEE 11th International Conference on Dependable Systems, Services and Technologies (DESSERT), Kyiv, Ukraine, 2020, pp. 247-252, doi: 10.1109/DESSERT50317.2020.9124998.

DERGACHOV, Konstantin et al. Data pre-processing to increase the quality of optical text recognition systems. **Radioelectronic and Computer Systems**, [S.l.], n. 4, p. 183-198, nov. 2021. ISSN 2663-2012. doi:https://doi.org/10.32620/reks.2021.4.15.

Kulik, A., Degrachov, K., & Lytvynenko, T. (2012). Development and research of differential mode GNSS model for intelligent transport functioning providing. Transport Problems, 7(4), 71-77.

Bilozerskyi, V., Dergachov, K., Krasnov, L., Zymovin, A., & Popov, A. (2023). New method for video stream brightness stabilization: algorithms and performance evaluation. Radioelectronic and Computer Systems, (3), 125-135.

Dergachov, K., et al. "Web-cameras stereo pairs color correction method and its practical implementation." Сучасні інформаційні системи 3,№ 1 (2019): 29-42.

Bilozerskyi V., Dergachov K., Krasnov L. Analiz i poperednya obrobka videodanykh dlya pidvyshchennya yakosti roboty system tekhnichnoho zoru [Analysis and pre-processing of video data to improve the quality of computer vision systems]. Problemy keruvannya ta informatyky–Problems of control and informatics, 2023, vol. 68, no. 2 //DOI. – 2023. – Т. 10. – С. 1028-0979.

Dergachov, K., Krasnov, L., Cheliadin, O., & Kazatinskij, R. (2020). VIDEO DATA QUALITY IMPROVEMENT METHODS AND TOOLS DEVELOPMENT FOR MOBILE VISION SYSTEMS. Advanced Information Systems, 4(2), 85–93. https://doi.org/10.20998/2522-9052.2020.2.13

Kulik, A., Dergachov, K., & Radomskyi, O. (2015). Binocular technical vision for wheeled robot controlling. Transport Problems, 10(1), 55–62. Politechnika Śląska. Wydawnictwo Politechniki Śląskiej.

V. Bilozerskyi, K. Dergachov and L. Krasnov, "New methods for video data pre-processing to improve the quality of computer vision systems," 2023 IEEE 4th KhPI Week on Advanced Technology (KhPIWeek), Kharkiv, Ukraine, 2023, pp. 1-6, doi: 10.1109/KhPIWeek61412.2023.10312988.

Kulik, A., Dergachov, K., Pasichnik, S., & Sokol, D. (2022). Rational control of the temperature of vortex energy separator under destabilizing influence. Radioelectronic and Computer Systems, (3), 47-66.

Dergachov, K., Krasnov, L., Bilozerskyi, V., & Zymovin, A. (2022). Development of tools for information protection of optical text recognition systems. Radioelectronic and Computer Systems, (2), 159-177.

Kulik, A., Dergachov, K., Pasichnik, S., & Yashyn, S. (2021). Motions models of a two-wheeled experimental sample. Radioelectronic and Computer Systems, (1), 40-49.

Dergachov, K., Krasnov, L., Cheliadin, O., & Zymovin, A. (2018). ADAPTIVE ALGORITHMS OF FACE DETECTION AND EFFECTIVENESS ASSESSMENT OF THEIR USE. *Advanced Information Systems*, *2*(3), 10–18. https://doi.org/10.20998/2522-9052.2018.3.02

Kulik, A., Dergachov, K., & Lytvynenko, T. (2014). The methods for diagnostic of the technical condition of vehicles employing high precise satellite data. Transport Problems, 9(1), 119-128.

A. Popov, I. Vasilyeva, V. Kosharskyi and K. Dergachov, "Selection of Color Contrast Objects Against a Non-Stationary Background Using Modified HSV Model," *2023 IEEE International Conference on Information and Telecommunication Technologies and Radio Electronics (UkrMiCo)*, Kyiv, Ukraine, 2023, pp. 84-87, doi: 10.1109/UkrMiCo61577.2023.10380393.

A. Kulik, V. Dzhulgakov, K. Dergachov and V. Petrenko, "Intelligent Control of Electric Flywheel Motors Unit," *2022 12th International Conference on Dependable Systems, Services*

and Technologies (DESSERT), Athens, Greece, 2022, pp. 1-6, doi: 10.1109/DESSERT58054.2022.10018730.

Dergachov, K., Krasnov, L., Bilozerskyi, V., & Zymovin, A. (2022). Methods and algorithms for protecting information in optical text recognition systems. Radioelectronic and Computer Systems, (1), 154-169.

Kulik, A., Dergachev, K., Pasichnik, S., Nemshilov, Y., & Filippovich, E. (2021). Algorithms for control of longitudinal motion of a two-wheel experimental sample. Radioelectronic and Computer Systems, (2), 16-30.

Kulik, A., Dergachov, K. and Pasichnik, S. (2025) "Algorithms of holding-balance two-wheeled experimental sample stabilization and positioning", International Scientific Technical Journal "Problems of Control and Informatics", 70(2), pp. 5–21. doi: 10.34229/1028-0979-2025-2-1.

Dergachov, K., Kulik, A., & Zamiatin, A. (2023). Adaptive information technology of UAV visual navigation based on contour description of objects. *CEUR Workshop Proceedings, 3981*, 102–112. Retrieved from https://ceur-ws.org/Vol-3981/paper09.pdf

Bilozerskyi, V., Bilous, O., Dergachov, K. and Krasnov L. (2024) "Performance evaluation of a novel method for real-time brightness stabilization of video streaming", International Scientific Technical Journal "Problems of Control and Informatics", 69(1), pp. 87–104. doi: 10.34229/1028-0979-2024-1-8.

Kulik, A., Dergachov, K., Pasichnik, S., & Sokol, D. (2023). Rational control by temperature in vortex energy separator under destabilizing effects. Aviation, 27(4), 234–241. https://doi.org/10.3846/aviation.2023.20229

Bilozerskyi, V., Dergachov, K. and Krasnov, L. (2024) "Analysis and pre-processing of video data to improve the quality of vision systems", International Scientific Technical Journal "Problems of Control and Informatics", 68(2), pp. 50–66. doi: 10.34229/1028-0979-2023-2-4.

Kulik, A. S., Dergachov, K. Y., Pasichnyk, S. N., & Nemshilov, Y. A. (2020). Control algorithm of angular motion of the rocker with electric drive screw. Aerospace Technic and Technology, (4), 44–59. National Aerospace University "Kharkiv Aviation Institute".

Dergachov, K., Krasnov, L., Cheliadin, O., & Plakhotnyi, O. (2019). Web-cameras stereo pairs color correction method and its practical implementation. *Advanced Information Systems, 3*(1), 29–42. https://doi.org/10.20998/2522-9052.2019.1.06

Books, Chapters in Collective Monographs:

Kulik, A., Dergachev, K. (2016). Intelligent Transport Systems in Aerospace Engineering. In: Sładkowski, A., Pamuła, W. (eds) Intelligent Transportation Systems – Problems and Perspectives. Studies in Systems, Decision and Control, vol 32. Springer, Cham. https://doi.org/10.1007/978-3-319-19150-8_8

Shmelova, T., Sikirda, Y., Rizun, N., Kucherov, D., & Dergachov, K. (2019). Automated Systems in the Aviation and Aerospace Industries.

Dergachov, K. & Kulik, A. (2019). Ensuring the Safety of UAV Flights by Means of Intellectualization of Control Systems. In T. Shmelova, Y. Sikirda, N. Rizun, & D. Kucherov (Eds.), Cases on Modern Computer Systems in Aviation (pp. 287-310). IGI Global Scientific Publishing. https://doi.org/10.4018/978-1-5225-7588-7.ch012

Dergachov, K. & Kulik, A. (2021). Impact-Resistant Flying Platform for Use in the Urban Construction Monitoring. In J. Tenedório, R. Estanqueiro, & C. Henriques (Eds.), Methods and Applications of Geospatial Technology in Sustainable Urbanism (pp. 520-551). IGI Global Scientific Publishing. https://doi.org/10.4018/978-1-7998-2249-3.ch017

Dergachov, K., Kulik, A., & Zymovin, A. (2019). Environments Diagnosis by Means of Computer Vision System of Autonomous Flying Robots. In T. Shmelova, Y. Sikirda, N. Rizun, D. Kucherov, & K. Dergachov (Eds.), Automated Systems in the Aviation and Aerospace Industries (pp. 115-137). IGI Global Scientific Publishing. https://doi.org/10.4018/978-1-5225-7709-6.ch004

Kulik, A., Dergachov, K., & Radomskyi, O. (2015). Binocular technical vision for wheeled robot controlling. *Transport Problems, 10*(1), 55–62. Politechnika Śląska. Wydawnictwo Politechniki Śląskiej. Retrieved from https://sladkowski.com/uploads/publications/40/261m.pdf

Dergachov, K. & Kulik, A. (2020). Rational Adaptation of Control Systems for the Autonomous Aircraft Motion. In T. Shmelova, Y. Sikirda, & A. Sterenharz (Eds.), Handbook of Research on Artificial Intelligence Applications in the Aviation and Aerospace Industries (pp. 36-65). IGI Global Scientific Publishing. https://doi.org/10.4018/978-1-7998-1415-3.ch002

Dergachov, K., Dubinin, V., Ovdiyuk, E., Bychkova, I., Puhach, D. (2025). Simulation Platform for Testing and Validating of UAV Visual Guidance Algorithms. In: Ostroumov, I., Marais, K., Zaliskyi, M. (eds) Advances in Civil Aviation Systems Development. ACASD 2025. Lecture Notes in Networks and Systems, vol 1418. Springer, Cham. https://doi.org/10.1007/978-3-031-91992-3_37

Hurtovyi, O., Dergachov, K., Yaremenko, A. (2025). Visual Positioning of the UAV in Conditions of Impossibility of Using External Navigation Signals. In: Ostroumov, I., Marais, K., Zaliskyi, M. (eds) Advances in Civil Aviation Systems Development. ACASD 2025. Lecture Notes in Networks and Systems, vol 1418. Springer, Cham. https://doi.org/10.1007/978-3-031-91992-3_36

Dergachov, K., Ovdiyuk, E., Dubinin, V. (2025). Comparative Analysis Region of Interest (ROI) Tracking Methods. In: Lytvynov, O., Pavlikov, V., Krytskyi, D. (eds) Integrated Computer Technologies in Mechanical Engineering - 2024. ICTM 2024. Lecture Notes in Networks and Systems, vol 1473. Springer, Cham. https://doi.org/10.1007/978-3-031-94845-9_6

Bilozerskyi, V., Dergachov, K., Hurtovyi, O. (2025). Performance Evaluation of Modified Detection Algorithms Within the Framework of a Simulation System for Modelling UAV Visual Guidance. In: Lytvynov, O., Pavlikov, V., Krytskyi, D. (eds) Integrated Computer Technologies in Mechanical Engineering - 2024. ICTM 2024. Lecture Notes in Networks and Systems, vol 1473. Springer, Cham. https://doi.org/10.1007/978-3-031-94845-9_7

Dzhulgakov, V., Dergachov, K., Kulik, A., Nechiporuk, M., Pasichnyk, S., & Petrenko, V. (2023). Rational control of operability of the model unit of electric flywheel motors.

Kulik, A., Dergachov, K., Pasichnik, S., Dzhulgakov, V., Petrenko, V. (2022). Rational Control of the Operability of the Model Unit of Electric Flywheel Motors Under Destabilizing Effects. In: Nechyporuk, M., Pavlikov, V., Kritskiy, D. (eds) Integrated Computer Technologies in Mechanical Engineering – 2021. ICTM 2021. Lecture Notes in Networks and Systems, vol 367. Springer, Cham. https://doi.org/10.1007/978-3-030-94259-5_36

Dergachov, K., Krasnov, L., Cheliadin, O., & Plakhotnyi, O. (2021). The Method and Tools Development for Web-Cameras Color Correction in Binocular Vision Systems. In F. Cipolla-Ficarra (Ed.), Handbook of Research on Software Quality Innovation in Interactive Systems (pp. 154-191). IGI Global Scientific Publishing. https://doi.org/10.4018/978-1-7998-7010-4.ch006

Dergachov, K. Yu., Krasnov, L. A., & Pyavka, E. V. (2017). Algorithms of finding out objects and estimation of parameters of their motion are in systems of technical sight. *Radioelectronic and Computer Systems, (4)*, 28–39.

ADDITIONAL INFORMATION:

Language Proficiency:
Ukrainian, English

IT Skills:
C++/ Python / MATLAB / Maple / Microsoft SQL Server / Microsoft Office / Microsoft Excel / Social Media / Zoom / Google Documents / Skype / Organizational and planning skills

Social and Community Activities:
Charity during the full-scale invasion of russia.
Responsible for promoting and coordinating gender equality policies at the National Aerospace University "Kharkiv Aviation Institute", organizing events, trainings, and awareness campaigns, and ensuring institutional alignment with European standards on inclusion and diversity.