Curriculum Vitae – Adam Czajka

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1 Research Interests

My research focuses on human biometrics and security, especially on iris recognition and methods of detecting unknown presentation attacks. In my research I try to understand how human perception of abnormal (from a biometric point of view) signals can be effectively used to build computer algorithms generalizing better to never-seen-before attack types, and how computer algorithms can aid humans in examining biometric samples to create trustworthy human-machine pairing approaches. In general, I am fascinated by a wide spectrum of research in computer vision and machine learning and their non-obvious intersections with psychology, medical sciences and art. I have 15+ years of experience as an engineering faculty member and 15+ years of teaching experience at the undergraduate and graduate levels.

2 Education

- Dr. Habil. (habilitation[†]) in Computer Science, Warsaw University of Technology, Poland, 2018
- Ph.D. in Biometrics (outstanding dissertation award), Warsaw University of Technology, Poland, 2005
- B.Sc. + M.Sc. in Computer Control Systems (hons), Warsaw University of Technology, Poland, 2000

[†]Habilitation is a post-Ph.D. qualification required in many European countries in order to conduct self-contained and independent university teaching, advising Ph.D. students, and to obtain a full professorship title.

3 Experience

3.1 Academic

1. University of Notre Dame
   Department of Computer Science and Engineering
   384 Fitzpatrick Hall, Notre Dame, IN 46556, USA
   - Jul. 2023 – present: Associate Professor (tenured appointment)
   - Aug. 2018 – June 2023: Assistant Professor (tenure-track)
   - Jan. 2018 – Aug. 2018: Research Assistant Professor
   - Jan. 2016 – Dec. 2017: Visiting Assistant Professor (invited by Kevin Bowyer)
   - Aug. 2014 – Dec. 2014: Visiting Associate Professor (invited by Kevin Bowyer)

   Affiliations:

   - The Berthiaume Institute for Precision Health (2020-present)
   - The Lucy Family Institute for Data & Society (2020-present)
   - Concurrent Assistant Professor in Electrical Engineering (Aug. 2018 – Sept. 2020)

2. Warsaw University of Technology, Poland
   Institute of Control and Computation Engineering
   Faculty of Electronics and Information Technology
   Nowowiejska 15/19, 00-665 Warsaw, Poland

- Apr. 2006 – Aug. 2017: Assistant Professor
- Oct. 2002 – Aug. 2017: Head and co-founder of Biometrics and Machine Learning Laboratory
- Oct. 2003 – Mar. 2006: Research Assistant

3.2 Industrial / R&D

1. Research and Academic Computer Network – research institute (NASK), Poland
   Kolska 12, 01-045 Warsaw, Poland
   - January 2019 – September 2020: Advisor of the Research Director
   - Feb. 2006 – December 2018: Assistant Professor
   - Jun. 2006 – Jun. 2015: Member of the Scientific Council
   - Oct. 2003 – Dec. 2015: V-ce Head and co-founder of Biometrics Laboratory
   - Oct. 2002 – Jan. 2006: Research Assistant
2. Gemplus (later Gemalto acquired by Thales)
   Kruczkowskiego 8, 00-380 Warsaw, Poland
   - 1998 – 2000: Application Support
     (smart cards and cryptography programming, conducting technical trainings and consulting for European customers from Poland, Czech Republic, Slovakia and Hungary).
3. Estima Coaching LLC (former Estima Coaching Ltd, UK)
   South Bend, IN
   - 2015 – present: Co-Owner
     (a company commercializing business coaching tools based on artificial intelligence and psychology)
4. Asignio Inc.
   Seattle, USA
   - 2019 – present: Member of Technical Advisory Board

4 Honors and Awards

- NSF CAREER, 2023–2028
- Conferences
  a) Best Paper Award, *Computer Vision for Physiological Measurement Workshop (CVPM; in conjunction with CVPR 2023)*, Vancouver, Canada, June 2023 [C-2023-5]
  b) Best Presentation Award, *xAI4Biometrics at WACV 2023 – 3rd Workshop on Explainable & Interpretable Artificial Intelligence for Biometrics*, Waikoloa, Hawaii, January 2023 [C-2022-8]
  c) Best Reviewer Award, *IEEE/IAPR International Joint Conference on Biometrics (IJCB 2021)*, August 2021, Shenzhen, China
  d) Best Paper Award, *The 7th IEEE Int. Conference on Biometrics: Theory, Applications and Systems (BTAS 2015)*, September 2015, Arlington, USA [C-2015-3]
- Laureate of the INNOVATOR competition organized by the Foundation of Polish Science (FNP)
  In 2008 the team lead by me was awarded one (out of three) funding promise for commercialization of my Ph.D. ("Modular Iris Recognition System"). There were 26 competing teams in total.
- Awarded by the Rector of Warsaw University of Technology
  a) team award for teaching achievements, 2012
  b) individual award for distinguished doctoral thesis, 2005
  a) team award for scientific achievements on the European FP5 QoSIPS project, 2002
- Elevation to the IEEE Senior Member, 2012

5 Grants and Contracts

5.1 Anticipated Award(s)

Award notice received from the sponsor, and waiting for the contract to be signed.

[Pro34] (Lead PI) "Iris Image Synthesis," FBI Biometric Center of Excellence (via West Virginia University, USA), May 2024 - April 2025, $253,332
[Other co-PIs: Kevin Bowyer, Patrick Flynn, University of Notre Dame]

5.2 Current funding

[Pro33] (Sole PI) "CAREER: Human-Machine Supervision Cycle for Trustworthy Biometrics," National Science Foundation, June 2023 – May 2028, $556,639

[Pro32] (Lead PI) "Pupil Dilation Modeling," FBI Biometric Center of Excellence (via West Virginia University, USA), March 2023 - May 2024, $299,397
[Other co-PIs: Kevin Bowyer, Patrick Flynn, University of Notre Dame]

[Pro31] (Sole PI at ND) "Biometrically Inferred Observations for Determining Access and Tracking (BIODAT) – Phase II," Department of the Army, July 2023 – December 2024, $154,234
[Subcontractor to Lynntech, Inc.]

[Pro30] (Sole PI) "Human-machine Pairing for Trustworthy AI" (Phase II), Naval Surface Warfare Center, Crane Division (via Purdue University), October 2022 – September 2024, $308,485
[Part of "Trusted AI: Trust Is Not Optional" umbrella project led by Chris Sweet (ND) and David Crandall (IU); $2,140,145]

[Pro29] (Sole PI) "Trust and Verifiability in AI" (Phase II), Naval Surface Warfare Center, Crane Division (via Purdue University), October 2022 – September 2024, $326,916
[Part of "Trusted AI: Trust Is Not Optional" umbrella project led by Chris Sweet (ND) and David Crandall (IU); $2,140,145]

[Pro28] (Co-I) "Cerberus: Guarding Sensitive Data with Trigeneous Secure Computations," US Department of Homeland Security (via Arizona State University),
[Lead PI: Taeho Jung, University of Notre Dame. Other investigators: David Cousins, Director / Lead, Kurt Rohloff, CTO / Transition Consultant, Nicholas Genise, Technical Consultant, Duality Technologies]

5.3 Projects Completed at Notre Dame

[Pro27] (Lead PI) "Development of Open-Source Iris Recognition Methods for IREX 10 Evaluations," National Institute of Standards and Technology (NIST), USA, October 2022 – December 2023, $104,434
[Co-PI: Patrick Flynn, University of Notre Dame]

[Pro26] (Sole PI) Gifts from Amazon Robotics LLC to support computer vision research and capstone project realized by students in *Computer Vision II* and *Neural Networks* classes; $80,000, awarded in October 2019; $50,000, awarded in October 2021

[Pro25] (co-PI) "Physiological Feature Extraction and Analytics," Securiport LLC, 2022-2023, $624,726
[Lead PI: Patrick Flynn, University of Notre Dame]

[Pro24] (Sole PI) "Gender Bias in Iris Recognition (GBIR)," FBI Biometric Center of Excellence (via West Virginia University, USA), March 2022 - May 2023, $269,358
[Senior personnel: Kevin Bowyer, Patrick Flynn, University of Notre Dame]

[Pro23] (Co-PI) "Distant Observation Enhancement and Recognition System" (DOERS, Phase I), IARPA, 2021-2023, $834,373
[Subcontractor to Kitware; lead PI at ND: Patrick Flynn, other co-PIs at ND: Kevin Bowyer and Jane Cleland-Huang; parent award lead PI: Scott McCloskey, Kitware]

[Pro22] (Sole PI) "Human-machine Pairing for Trustworthy AI," Naval Surface Warfare Center, Crane Division (via Purdue University), June 2021 - September 2022, $165,000
[Part of "Trusted AI: Trust Is Not Optional" umbrella project led by Chris Sweet (ND) and David Crandall (IU), $1,100,000]

[Pro21] (Sole PI) "Trust and Verifiability in AI," Naval Surface Warfare Center, Crane Division (via Purdue University), June 2021 - September 2022, $150,273
[Part of "Trusted AI: Trust Is Not Optional" umbrella project led by Chris Sweet (ND) and David Crandall (IU), $1,100,000]

[Pro20] (co-PI) "Variable Iris Image Quality (VII-Q) Data Corpus Development," National Institute of Standards and Technology, 2021-2022, $29,835
[Lead PI: Patrick Flynn, University of Notre Dame]

[Pro19] (co-PI) "Deception Detection in Video," Securiport LLC, 2019-2021, $635,408
[Lead PI: Patrick Flynn, other co-PI: Kevin W. Bowyer, University of Notre Dame]

[Pro18] (Lead PI) "Software tool and methodology for enhancement of unidentified decedent systems with post-mortem automatic iris recognition," National Institute of Justice, January 2019 - June 2021, $642,979
[co-PIs: Arun Ross, Michigan State University; Dennis Chute, Dutchess County Medical Examiner's Office; Patrick Flynn, Kevin W. Bowyer, University of Notre Dame]

[Pro17] (Lead PI) "Synthetic Iris and Contact Lens Detection" (SICLD), FBI Biometric Center of Excellence (via West Virginia University, USA), May 2020 - May 2021, $215,908
[co-PI: Kevin W. Bowyer, University of Notre Dame]

[Pro16] (co-PI at ND) "Unconstrained Text Optical Character Recognition" (UTR), FBI Biometric Center of Excellence (via West Virginia University, USA), May 2018 - June 2019, $194,846
[PI: Walter Scheirer, other co-PIs: Patrick Flynn, Kevin W. Bowyer, University of Notre Dame]

[Pro15] (Lead PI) "Contacless Fingerprint Collection" (CFC), FBI Biometric Center of Excellence (via West Virginia University, USA), May 2019 - June 2020, $219,973
[co-PIs: Patrick Flynn, Kevin W. Bowyer, Walter Scheirer, University of Notre Dame]

[Pro14] (Sole PI) "Sparse Feature Representations for Presentation Attack Detection in Iris Recognition", Notre Dame Int. (Luksic Family Collaboration Grant), September 2019 - June 2020, $9,869
[International collaborator: Domingo Mery, Pontificia Universidad Católica de Chile]

[Pro13] (co-PI at ND) "Synthesis of Realistic Facial Videos" (SREFV), FBI Biometric Center of Excellence (via West Virginia University, USA), 2018-2019, $247,391
[PI: Patrick Flynn, other co-PIs: Kevin W. Bowyer, Walter Scheirer, University of Notre Dame]

[Pro12] (Lead PI at ND) "A Tool Supporting Human Examination of Post-mortem Iris Images" (TSHEPII), FBI Biometric Center of Excellence (via West Virginia University, USA), 2017-2018, $248,407
[co-PIs: Kevin W. Bowyer, Patrick Flynn, University of Notre Dame]

5.4 Projects Completed at WUT / NASK (before Notre Dame)

[Pro11] (Senior researcher at WUT, until Aug. 2017) "enhAnced Mobile BiomEtRics" (AMBER), Marie Skłodowska-Curie Innovative Training Network, 2017-2020, €2,505,152 (≈ $2,955,878)
[Project Coordinator: Richard Guest, University of Kent, UK]

[Pro10] (Researcher at ND, Jan. 2016 – May 2016) "Automatic Classification of Left/Right and Up/Down Orientation of Iris Images" (ACII), FBI Biometric Center of Excellence (via West Virginia University), 2015-2016, $278,160
[PI: Kevin W. Bowyer, co-PI: Patrick Flynn]

[Pro9] (co-PI) "Iris Liveness Detection Competition" (LivDet-Iris, `http://livdet.org`). Co-organization of the iris liveness detection competition series (four editions so far: 2013, 2015, 2017 and 2020). Co-organizers: Clarkson University (US), University of Notre Dame (US), Warsaw University of Technology (PL), Medical University of Warsaw (PL), West Virginia University (US), IIIT-Delhi (IN) and IDIAP (CH). Sponsors: CITeR (US) and NASK (PL).
[co-PI: Stephanie Schuckers, Clarkson University]

[Pro8] (co-PI and senior researcher at NASK) "Biometric Physical Access Control" (BPAC), R&D project, Research and Academic Computer Network (NASK), April 2014 – December 2015

[Pro7] (Researcher at WUT) "Biometrics and Security" (BIOSEC), EU project under the Sixth Framework Program (IST-2002-001766-BIOSEC), 2003–2005
[Project Coordinator: Orestes Sanchez Benavente, Telefónica I+D, Spain]

[Pro6] (Dissemination Officer at WUT) "Quality of Service and Pricing Differentiation for IP Services" (QoSIPS), EU project under the Fifth Framework Program (IST-1999-20033), 2000 – 2002
[Project Coordinator: Nathalie Cassaigne, Univ. of Manchester, UK]

[Pro5] (Sole PI at NASK) "Security analysis and implementation of algorithms increasing the security of biometric sensors," Hitachi Ltd. R&D project, 2013–2014

[Pro4] (Senior researcher, 2011 – 2013, and site PI, Aug. 2013 – Dec. 2013 at NASK) "Biometric techniques and PKI in modern identification documents" (BIOPKI), R&D project, The National Centre for Research and Development (NCBiR), 2011–2013, 6,265,229.49 PLN (≈ $1,720,550)

[Pro3] (Senior researcher at NASK) "Secure station for special purposes" (BSDZS), R&D project, The National Centre for Research and Development (NCBiR), 2010–2012, 3,983,200 PLN (≈ $1,093,862)

[Pro2] (co-PI, and member of the project Steering Committee) "Platform of secure implementation of biometrics" (PBIB), R&D project, Ministry of Science and Higher Education, Department of Security Research, 2009–2011, 2,200,000 PLN (≈ $604,161)

[Pro1] (Sole PI) "SDK for Iris Recognition" (BiomIrisSDK), R&D project, Research and Academic Computer Network (NASK), March 2007 – September 2008

[Pro0] (Coordinator of modernization and development of the Biometrics and Machine Learning Laboratory at WUT) "Photonics and Terahertz Technologies – Development of the Faculty Research Center" (FOTEH), equipment grant under Innovative Economy EU Program (POIG) for renovating the Biometrics and Machine Learning Laboratory, 2010 – 2011, 38,177,390.68 PLN (≈ $10,484,233)

6 Teaching and Advising

6.1 Current Ph.D. Advisees

- Patrick Tinsley (co-advised with Patrick Flynn),
  proposal defended in 2022, PhD defense scheduled for April 8, 2024
- Jacob Piland (co-advised with Chris Sweet), expected 2024
- Mahsa Mitcheff, expected 2025
- Siamul Karim Khan, expected 2025
- Timothy Redgrave, expected 2025
- Colton Crum, expected 2025 (proposal defended in 2024)
- Rasel Ahmed Bhuiyan, expected 2026
- Byron Dowling, expected 2027

6.2 Past Ph.D. Advisees

- Jeremy Speth, Ph.D., graduated in November 2023 (co-advised with Patrick Flynn)
  Title: "Remote Vitals Estimation in Open World"
  First employment after graduation: Presage Technologies, Herndon, VA
- Aidan Boyd, Ph.D., graduated in February 2023 (co-advised with Kevin Bowyer)
  Title: "Human-Machine Teaming to Improve Computer Vision"
  First employment after graduation: Nokia Bell Labs, New Jersey
- Mateusz Trokielewicz, Ph.D., graduated *summa cum laude* in June 2019
  Title: "Iris recognition methods resistant to biological changes in the eye"
  First employment after graduation: Assistant Professor at the Warsaw University of Technology, and at NASK – National Research Institute, Poland

6.3 Postdoctoral Scholars Supported

- Andrey Kuehlkamp, 2019 – 2021
- Daniel Henriques Moreira, 2017 – 2018

6.4 Past M.Sc. and B.Sc. Advisees

- Lucas Parzianello, M.Sc. (2023), graduated at ND
- Ewelina Bartuzi, B.Sc. (2016), graduated at WUT
- Katarzyna Michowska, B.Sc. (2016), graduated at WUT
- Rafał Będźkowski, B.Sc. (2015), graduated at WUT
- Anna Janczarska, B.Sc. (2014), graduated at WUT
- Kinga Gaweł, B.Sc. (2013), M.Sc. (2014), graduated at WUT
- Anna Kaźmierczak, B.Sc. (2013), graduated at WUT
- Angelika Konarska, B.Sc. (2013), graduated at WUT
- Jacek Rożen, B.Sc. (2013), graduated at WUT
- Mateusz Trokielewicz, B.Sc. (2013), M.Sc. (2014), graduated at WUT
- Paweł Bulwan, B.Sc. (2012), M.Sc. (2013), graduated at WUT
- Krzysztof Kozioł, B.Sc. (2012), M.Sc. (2013), graduated at WUT
- Krzysztof Piech, M.Sc. (2012), graduated at WUT
- Anna Wróblewska, B.Sc. (2012), graduated at WUT
- Jacek Michałek, B.Sc. (2011), M.Sc. (2012), graduated at WUT
- Artur Bielawski, B.Sc. (2010), M.Sc. (2011), graduated at WUT
- Weronika Gutfeter, B.Sc. (2010), graduated at WUT
- Maciej Pawlus, B.Sc. (2010), graduated at WUT
- Krzysztof Piech, B.Sc. (2010), graduated at WUT
- Marcin Tym-Czarnocki, B.Sc. (2010), graduated at WUT
- Rafał Brize, B.Sc. (2009), M.Sc. (2011), graduated at WUT
- Miłosz Olszewski, B.Sc. (2006), graduated at WUT
- Rafał Babicki, B.Sc. (2005), graduated at WUT
- Jarosław Florczuk, B.Sc. (2005), graduated at WUT

6.5 Mentorship

- Doctoral Consortium Mentor, International Joint Conference on Biometrics, Houston, TX, 2020
- ND Science & Engineering Scholars Program, Mentor, Fall 2020
- Mentor of the *Biometric Scientific Club*, 2014 – 2018

6.6 Teaching – University of Notre Dame

- *Introduction to Neural Networks* (CSE 60868/40868):
  Fall 2016, Spring 2022 (in cooperation with Amazon Robotics), Spring 2023, Spring 2024
- *Computer Vision I* (CSE 40535/60535):
  Spring 2016, Fall 2017, Fall 2018, Fall 2019, Fall 2020, Fall 2021, Fall 2022, Fall 2023
- *Computer Vision II* (CSE 40536/60536):
  Spring 2020, Spring 2021 (both editions in cooperation with Amazon Robotics)
- *Biometrics* (CSE 40537/60537):
  Fall 2014, Spring 2017, Spring 2018, Spring 2019
- *Trustworthy Biometrics: Truths, Myths, Advantages, Limitations and Hopes for Future*
  (Trio "Upward Bound" Summer Academy): Summer 2023
- Summer research with two REU students (Michael Krumdick, Benedict Becker), advisor for undergraduate research (Benedict Becker, Daniel Kerrigan, Zhaoyuan Fang, Matthew Lanus, Erin Thomassen, Joseph McGrath, Nolan Downey, Alan Johnson, Nick Caterisano, Kevin Borisiak, Brittany Barton, Chris Hunt, Augustine Hauge, Anna VanAvermaete, Aileen Dugan, Jozef Porubcin, John Provine, Samuel Webster, Gabriela Sierocka), advisor of senior thesis/project (Zhaoyuan Fang, Joseph McGrath)

6.7 Teaching – Warsaw University of Technology, Poland

- *Biometric Identity Verification (BIT)*:
  Fall 2006, Spring 2009, Spring 2010, Fall 2010, Spring 2011, Fall 2011, Spring 2012, Fall 2012, Spring 2013, Fall 2013, Spring 2014, Fall 2015
- Postgraduate Studies on *Security of IT Systems and Biometric Technology*:
  co-founder, Chair and lecturer, 2011 – 2017
- Advisor of 9 M.Sc. students (two graduated *summa cum laude*) and 20 B.Sc. students, 2003 – 2016
- Laboratory classes: *Operational Research*, *Object Programming in C++*, *Neural Networks* , 2000–2005

6.8 Warsaw School of Information Technology, Poland

- Laboratory and practical classes: *Operational Research*, 2002 – 2003

7 Professional Membership

- The Organization of Scientific Area Committees For Forensic Science (OSAC)
  Regular Member: since Jan. 2024
- IEEE Biometrics Council:
  Member: since 2017
- International Neural Network Society (inns.org)
  Member: since 2024
- IEEE (Institute of Electrical and Electronics Engineers; ieee.org)
  Member: 2002–2012; *Senior Member* since 2012; *Secretary, Poland Section*: 2006–2009; *Member, Conference Committee, IEEE Biometrics Council*: 2017-2018; *Member, Education Committee, IEEE Biometrics Council*: since 2017
- International Association for Identification (theiai.org)
  Associate Member: since 2018
- EAB (European Association for Biometrics; eab.org)
  Active Member: since 2012
- INSTICC (Institute for Systems and Technologies of Information, Control and Communication; insticc.org)
  Member: since 2012
- Applied Biometrics for the Security of Critical Infrastructures (under the umbrella of the European Reference Network for Critical Infrastructure Protection (ERNCIP) project)
  Expert: 2012–2016
- Main Council of the Research Institutes in Poland (RGIB)
  Member: 2015–2016, *Elector*: 2013–2016 (RGIB is the elective representative body that represents interests of the research institutes to the state and local government authorities, and to the scientific, economic and public organizations as well as to the opinion-forming elites.)
- Scientific Council of the NASK Research Institute
  Member: 2006–2015 (Scientific Council of a research institute is a consultancy body providing opinions to the institute Director related to the most essential aspects of the institute operation. Membership in the NASK Scientific Council at that time was awarded after winning the election, in which all NASK employees voted for their candidates.)
- Bank Technology Forum (FTB) – Biometric Experts Group
  Member: 2008–2011 (The FTB, part of The Polish Bank Association, creates a technological bridge between key biometric companies, practitioners, researchers and banks operating in Poland.)

8 Technical Publications

Students (co-)advised by me, and post-docs supported from my grants are marked as: (*) for undergraduates, (@) for graduate students, and (+) for postdoctoral fellows.

8.1 Patents Granted

[P-2019-1] **Adam Czajka**, Zhaoyuan Fang*, Kevin W. Bowyer, "Method of Textured Contact Lens Detection," US Patent No. 11.768.926, granted on September 26, 2023 (priority date: Oct. 24, 2018)

[P-2011-1] **Adam Czajka**, Andrzej Pacut, Marcin Chochowski, "Method of Eye Aliveness Testing and Device for Eye Aliveness Testing," US Patent No. 8.061.842, granted on November 22, 2011 (priority date: Sept. 7, 2006)

8.2 Patents Pending

[P-2022-4] Nathan Vance, Jeremy Speth[@], Siamul Karim Khan[@], **Adam Czajka**, Kevin W. Bowyer, Diane Wright, Patrick Flynn, Nathan Carpenter, Leandro Olie, "Deception detection," U.S. Patent Application No. 18/115,414, 2023

[P-2022-3] Jeremy Speth[@], Nathan Vance, Patrick Flynn, **Adam Czajka**, "Non-contrastive Unsupervised Learning of Physiological Signals from Video," U.S. Patent Application No. 63/424,606, November 11, 2022

[P-2022-2] Jeremy Speth[@], Patrick Flynn, **Adam Czajka**, Benjamin Sporrer, Lu Niu, Nathan Carpenter, Leandro Olie, "Trustworthy Anomaly-Aware Remote Pulse Estimation," U.S. Patent Application No. 63/388,984, July 13, 2022

[P-2022-1] Jeremy Speth[@], Patrick Flynn, **Adam Czajka**, Kevin Bowyer, Nathan Carpenter, Leandro Olie, "Video based detection of pulse waveform," U.S. Patent Application No. 17/591,929, February 3, 2022

8.3 Refereed Journals with *Impact Factor*

[A-2023-2] Jacob Piland[@], Adam Czajka and Chris Sweet, "Model Focus Improves Performance of Deep Learning-Based Synthetic Face Detectors," *IEEE Access*, Vol. 11, pp. 63430-63441, 2023 **[Impact Factor (2022)** = 3.9]

[A-2023-1] Aidan Boyd[@], Jeremy Speth[@], Lucas Parzianello[@], Kevin Bowyer, and **Adam Czajka**, "Comprehensive Study in Open-Set Iris Presentation Attack Detection," *IEEE Transactions on Information Security and Forensics*, Vol. 18, pp. 3238-3250, 2023; pre-print available at `https://arxiv.org/abs/2208.10564` **[Impact Factor (2023)** = 6.8]

[A-2022-1] Nathan Vance, Jeremy Speth[@], Siamul Karim Khan[@], **Adam Czajka**, Kevin W. Bowyer, Diane Wright, Patrick Flynn, "Deception Detection and Remote Physiological Monitoring: A Dataset and Baseline Experimental Results," *IEEE Transactions on Biometrics, Behavior, and Identity Science*, vol. 4, no. 4, pp. 522-532, Oct. 2022, **[Impact Factor (2021)** = 3.7]

[A-2021-5] Maria Freytsis, Iain Barclay, Swapna Krishnakumar Radha, **Adam Czajka**, Geoffrey H Siwo, Ian Taylor and Sherri Bucher, "Development of a mobile, self-sovereign identity approach for facility birth registration in Kenya," *Frontiers in Blockchain*, 2021 , DOI: 10.3389/fbloc.2021.631341; available at: `https://www.frontiersin.org/articles/10.3389/fbloc.2021.631341/full` **[Impact Factor (2021)** = 3.1]

[A-2021-4] **Adam Czajka**, "Is that eye dead or alive? Detecting new iris biometrics attacks," *Biometric Technology Today*, pp. 9-12, Elsevier, May 2021 **(invited paper)** **[Impact Factor (2021)** = 0.9]

[A-2021-3] Christoph Busch, **Adam Czajka**, Farzin Deravi, Pawel Drozdowski, Marta Gomez-Barrero, Georg Hasse, Olaf Henniger, Els Kindt, Jascha Kolberg, Alexander Nouak, Kiran Raja, Raghavendra Ramachandra, Christian Rathgeb, Jean Salomon, Raymond Veldhuis, "A Response to the EDPS *Misunderstandings in Biometrics* by the European Association for Biometrics," *IET Biometrics*, Vol. 11, Issue 1, pp. 79-86, 2022 (first published: 11 November 2021) **[Impact Factor (2021)** = 2.8]

[A-2021-2] Jeremy Speth[@], Nathan Vance, Patrick Flynn, Kevin Bowyer, **Adam Czajka**, "Unifying frame rate and temporal dilations for improved remote pulse detection," *Computer Vision and Image Understanding*, Vol. 210, 2021, DOI: 10.1016/j.cviu.2021.103246 **[Impact Factor (2021)** = 4.0]

[A-2021-1] Zhaoyuan Fang*, **Adam Czajka**, Kevin W. Bowyer, "Robust Iris Presentation Attack Detection Fusing 2D and 3D Information," *IEEE Transactions on Information Security and Forensics*, Vol. 16, pp. 510-520, 2021, DOI: 10.1109/TIFS.2020.3015547; pre-print available at `https://arxiv.org/abs/2002.09137` **[Impact Factor (2021)** = 7.1]

[A-2020-4] Aidan Boyd[@], Shivanngi Yadav, Thomas Swearingen, Andrey Kuehlkamp[+], Mateusz Trokielewicz[@], Eric Benjamin, Piotr Maciejewicz, Dennis Chute, Arun Ross, Patrick Flynn, Kevin Bowyer, **Adam Czajka**, "Post-Mortem Iris Recognition – A Survey and Assessment of the State of the Art," *IEEE Access*, vol. 8, pp. 136570-136593, 2020, DOI: 10.1109/ACCESS.2020.3011364 [Impact Factor (2021) = 3.2]

[A-2020-3] Aidan Boyd[@], Zhaoyuan Fang[*], **Adam Czajka**, Kevin W. Bowyer, "Iris Presentation Attack Detection: Where Are We Now?" *Pattern Recognition Letters*, Vol. 138, pp. 483–489, 2020, DOI: 10.1016/j.patrec.2020.08.018; pre-print available at `https://arxiv.org/abs/2006.13252` [Impact Factor (2021) = 4.4]

[A-2020-2] Mateusz Trokielewicz[@], **Adam Czajka**, Piotr Maciejewicz, "Post-mortem Iris Decomposition and its Dynamics in Morgue Conditions," *Journal of Forensic Sciences,* Vol. 65, No. 5, pp. 1530-1538, 2020, DOI: 10.1111/1556-4029.14488; pre-print available at `https://arxiv.org/abs/1911.02837` [Impact Factor (2021) = 1.8]

[A-2020-1] Mateusz Trokielewicz[@], **Adam Czajka**, Piotr Maciejewicz, "Post-mortem iris recognition with deep-learning-based image segmentation," *Image and Vision Computing*, Vol. 94 (103866), Feb. 2020, pp. 1-11, DOI: 10.1016/j.imavis.2019.103866; pre-print available at `https://arxiv.org/abs/1901.01708` [Impact Factor (2021) = 3.5]

[A-2019-2] **Adam Czajka**, Mateusz Trokielewicz[@], Piotr Maciejewicz, "The Eyes have it: New iris recognition techniques can tell whether an Eye is healthy, diseased, or dead," in *IEEE Spectrum*, Vol. 56, No. 09, pp. 44-49, Sept. 2019, DOi: 10.1109/MSPEC.2019.8818591 **(invited paper)**
[Impact Factor (2021) = 1.5]

[A-2019-1] Mateusz Trokielewicz[@], **Adam Czajka**, Piotr Maciejewicz, "Iris Recognition After Death," *IEEE Transactions on Information Security and Forensics*, Vol. 14, No. 6, pp. 1501-1514, June 2019; pre-print available at `https://arxiv.org/abs/1804.01962` [Impact Factor (2021) = 7.1]

[A-2018-2] Andrey Kuehlkamp, Allan Pinto, Anderson Rocha, Kevin W. Bowyer, **Adam Czajka**, "Ensemble of Multi-View Learning Classifiers for Cross-Domain Iris Presentation Attack Detection," *IEEE Transactions on Information Security and Forensics*, pp. 1-13, 2018, DOI: 10.1109/TIFS.2018.2878542; pre-print available at `http://arxiv.org/abs/1811.10068`
[Impact Factor (2021) = 7.1]

[A-2018-1] **Adam Czajka**, Kevin W. Bowyer,"Presentation Attack Detection for Iris Recognition: An Assessment of the State of the Art," *ACM Computing Surveys*, Vol. 51, No. 4, pp. 86:1–86:35, 2018, DOI: 10.1145/3232849; pre-print available online at `https://arxiv.org/abs/1804.00194`) [Impact Factor (2021) = 12.7]

[A-2017-2] **Adam Czajka**, Kevin W. Bowyer, Estefan Ortiz, "Analysis of diurnal changes in pupil dilation and eyelid aperture," *IET Biometrics*, Vol. 7, No. 2, pp. 136-144, 2017, DOI: 10.1049/iet-bmt.2016.0191 [Impact Factor (2021) = 2.8]

[A-2017-1] **Adam Czajka**, Kevin W. Bowyer, Michael Krumdick[*], Rosaura Vidal Mata, "Recognition of image-orientation-based iris spoofing," *IEEE Transactions on Information Forensics and Security*, Vol. 12(9), pp. 2184–2196, 2017, DOI: 10.1109/TIFS.2017.2701332 [Impact Factor (2021) = 7.1]

[A-2016-2] **Adam Czajka**, Włodzimierz Kasprzak, Artur Wilkowski, "Verification of iris image authenticity using fragile watermarking," *Bulletin of the Polish Academy of Sciences. Technical Sciences*, Vol. 64, No. 4, pp. 807–819, 2016, DOI: 10.1515/bpasts-2016-0090 [Impact Factor (2021) = 0.4]

[A-2016-1] Mateusz Trokielewicz[@], **Adam Czajka**, Piotr Maciejewicz, "Implications of Ocular Pathologies for Iris Recognition Reliability," *Image and Vision Computing*, Vol. 58, pp. 158–167, Elsevier, 2016, DOI: 10.1016/j.imavis.2016.08.001 [Impact Factor (2021) = 3.5]

[A-2015-1] **Adam Czajka**, "Pupil Dynamics for Iris Liveness Detection," *IEEE Transactions on Information Forensics and Security*, Vol. 10(4), pp. 726–735, April 2015, DOI: 10.1109/ TIFS.2015.2398815 [Impact Factor (2021) = 7.1]

[B-2014-1] **Adam Czajka**, "Influence of Iris Template Aging on Recognition Reliability," *Communications in Computer and Information Science*, Vol. 452, pp. 284-299, Springer, November 2014, DOI: 10.1007/978-3-662-44485-6_20 **(invited chapter)** [Impact Factor (2021) = 0.3]

[A-2012-1] **Adam Czajka**, Krzysztof Piech,"Secure Biometric Verification Station Based on Iris Recognition," *Journal of Telecommunications and Information Technology (JTIT)*, Vol. 3, pp. 40–49, 2012 [**Impact Factor (2021)** = 0.4]

[A-2010-1] **Adam Czajka**, Andrzej Pacut, "Iris Recognition System Based on Zak-Gabor Wavelet Packets," *Journal of Telecommunications and Information Technology (JTIT)*, Vol. 4, pp. 10–18, 2010 [**Impact Factor (2021)** = 0.4]

8.4 Other Refereed Journals

[A-2024-1] Rasel Ahmed Bhuiyan[@], Adam Czajka, "Forensic Iris Recognition: A Survey," accepted for publication in *Journal of Forensic Identification*, March 2024

[A-2023-3] Colton R. Crum[@], Patrick Tinsley [@], Aidan Boyd[@], Jacob Piland[@], Christopher Sweet, Timothy Kelley, Kevin Bowyer, **Adam Czajka**, "Explain To Me: Salience-Based Explainability for Synthetic Face Detection Models," *IEEE Transactions on Artificial Intelligence*, pp. 1-12, December 2023, DOI: 10.1109/TAI.2023.3333310 (early access; pre-print: `https://arxiv.org/abs/2303.11969`)

[A-2007-2] **Adam Czajka**, Andrzej Pacut, "Iris Recognition with Adaptive Coding," *Rough Sets and Knowledge Technology, Lecture Notes in Artificial Intelligence*, Vol. 4481, pp. 195–202, Springer, 2007, DOI: 10.1007/978-3-540-72458-2_24

[A-2007-1] **Adam Czajka**, Przemek Strzelczyk, Andrzej Pacut, "Making iris recognition more reliable and spoof resistant," *SPIE Newsroom*, 2007, DOI: 10.1117/ 2.1200706.0614

8.5 Book Chapters

[B-2022-2] **Adam Czajka**, Benedict Becker*, Alan Johnson*, "Pupil Size Measurement and Application to Iris Presentation Attack Detection," to appear in: Marcel, Fierrez, Evans (Eds.), *Handbook of Biometric Anti-Spoofing – Presentation Attack Detection and Vulnerability Assessment* (3rd Edition), Advances in Computer Vision and Pattern Recognition book series (ACVPR), Springer, 2022

[B-2022-1] David Yambay, Priyanka Das, Aidan Boyd[@], Joseph McGrath*, Zhaoyuan (Andy) Fang*, **Adam Czajka**, Stephanie Schuckers, Kevin Bowyer, Mayank Vatsa, Richa Singh, Afzel Noore, Naman Kohli, Daksha Yadav, Mateusz Trokielewicz, Piotr Maciejewicz, Amir Mohammadi and Sebastien Marcel, "Review of Iris Presentation Attack Detection Competitions," to appear in: Marcel, Fierrez, Evans (Eds.), *Handbook of Biometric Anti-Spoofing – Presentation Attack Detection and Vulnerability Assessment* (3rd Edition), Advances in Computer Vision and Pattern Recognition book series (ACVPR), Springer, 2022

[B-2021-1] **Adam Czajka**, "Iris Recognition" in: Jajodia, Samarati and Yung (Eds.), *Encyclopedia of Cryptography, Security and Privacy*, Springer, Berlin, Heidelberg, 2021, DOI: 10.1007/978-3-642-27739-9_1515-1 **(invited chapter)**

[B-2019-1] Mateusz Trokielewicz[@], **Adam Czajka**, Piotr Maciejewicz, "Iris Recognition in Cases of Eye Pathology," in: Amine Nait-Ali (Ed.), *Biometrics under Biomedical Considerations*, pp. 41-69, Series in BioEngineering, Springer, 2019, DOI: 10.1007/978-981-13-1144-4 **(invited chapter)**

[B-2018-3] **Adam Czajka**, Benedict Becker*, "Application of Dynamic Features of the Pupil for Iris Presentation Attack Detection," in: Marcel, Nixon, Fierrez, Evans (Eds.), *Handbook of Biometric Anti-Spoofing* (2nd Edition), pp. 151-168, Advances in Computer Vision and Pattern Recognition book series (ACVPR), Springer, 2018, DOI: 10.1007/978-3-319-92627-8

[B-2018-2] David Yambay, **Adam Czajka**, Kevin Bowyer, Mayank Vatsa, Richa Singh, Afzel Noore, "Review of Iris Presentation Attack Detection Competitions," in: Marcel, Nixon, Fierrez, Evans (Eds.), *Handbook of Biometric Anti-Spoofing* (2nd Edition), pp. 169-183, Advances in Computer Vision and Pattern Recognition book series (ACVPR), Springer, 2018, DOI: 10.1007/978-3-319-92627-8

[B-2018-1] Allan Pinto, Helio Pedrini, Michael Krumdick*, Benedict Becker*, **Adam Czajka**, Kevin W. Bowyer, Anderson Rocha, "Counteracting Presentation Attacks in Face, Fingerprint, and Iris Recognition," Chapter 11 in: Mayank Vatsa, Richa Singh, Angshul Majumdar (Eds.), *Deep Learning in Biometrics*, pp. 245–293, CRC Press, 2018, ISBN: 9781351264990

[B-2016-1] **Adam Czajka**, "Iris Liveness Detection by Modeling Dynamic Pupil Features," Chapter 19 in: Kevin W. Bowyer, Mark J. Burge (Ed.), *Handbook of Iris Recognition*, Second Edition, pp. 439–467, Springer-Verlag London, 2016, DOI: 10.1007/978-1-4471-6784-6_19 **(invited chapter)**

[B-2005-1] Andrzej Pacut, **Adam Czajka**, Przemek Strzelczyk, "Iris biometrics for secure remote access," Chapter in: J. S. Kowalik *et al.* (Ed.), *Cyberspace Security and Defense: Research Issues*, NATO Science Series II: Mathematics, Physics and Chemistry, pp. 259–278, Springer, 2005, DOI: 10.1007/1-4020-3381-8_14

[B-2004-2] **Adam Czajka**, Andrzej Pacut, "Biometria tęczówki oka," (Eng. "Iris recognition"), Chapter in: Paweł Zając, Stanisław Kwaśniowski (Ed.), *Automatyczna identyfikacja w systemach logistycznych*, Sec. 7.4, pp. 214-228, Oficyna Wydawnicza Politechniki Wrocławskiej, 2004

[B-2004-1] **Adam Czajka**, Andrzej Pacut, "Biometria podpisu odręcznego," (Eng. "Handwritten Signatures Recognition"), Chapter in: Paweł Zając, Stanisław Kwaśniowski (Ed.), *Automatyczna identyfikacja w systemach logistycznych*, Sec. 7.7, pp. 244-260, Oficyna Wydawnicza Politechniki Wrocławskiej, 2004

8.6 Conference Proceedings

[C-2024-1] Rasel Ahmed Bhuiyan[@], **Adam Czajka**, "Forensic Iris Image Synthesis," The IEEE/CVF Winter Conf. on Applications of Computer Vision Workshops (WACVW), Jan. 8, 2024, Waikoloa, HI; pre-print available at `https://arxiv.org/abs/2312.04125`

[C-2023-8] Patrick Tinsley[@], Sandip Purnapatra, Mahsa Mitcheff[@], Aidan Boyd[@], Colton Crum[@], Kevin Bowyer, Patrick Flynn, Stephanie Schuckers, **Adam Czajka**, Meiling Fang, Naser Damer, Xingyu Liu, Caiyong Wang, Xianyun Sun, Zhaohua Chang, Xinyue Li, Guangzhe Zhao, Juan Tapia, Christoph Busch, Carlos Aravena, Daniel Schulz, "Iris Liveness Detection Competition (LivDet-Iris) – The 2023 Edition," The IEEE/IAPR International Join Conference on Biometrics (IJCB), Sept. 25 – 28, 2023, Ljubljana, Slovenia; pre-print available at `https://arxiv.org/abs/2310.04541`

[C-2023-7] Colton Crum[@], Aidan Boyd[@], Kevin Bowyer, **Adam Czajka**, "Teaching AI to Teach: Leveraging Limited Human Salience Data Into Unlimited Saliency-Based Training," The British Machine Vision Conference (BMVC), 20-24 November 2023, Aberdeen, UK

[C-2023-6] Jacob Piland[@], Christopher Sweet, Priscila Saboia, Charles Vardeman II, **Adam Czajka**, "Non-Generative Energy Based Models," The IEEE International Joint Conference on Neural Networks (IJCNN), June 18-23, 2023, Queensland, Australia

[C-2023-5] Lu Niu, Jeremy Speth[@], Nathan Vance, Ben Sporrer, **Adam Czajka**, Patrick Flynn, "Full-Body Cardiovascular Sensing with Remote Photoplethysmography," The Sixth International Workshop on Computer Vision for Physiological Measurement (CVPM; in conjunction with CVPR), Vancouver, Canada, June 18, 2023 (**best paper award**)

[C-2023-4] Jeremy Speth[@], Nathan Vance, Patrick Flynn, Adam Czajka, "Non-Contrastive Unsupervised Learning of Physiological Signals from Video," The IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR), Vancouver, Canada, June 18-22, 2023 (**conference highlight**)

[C-2023-3] Jeremy Speth[@], Nathan Vance, Benjamin Sporrer, Lu Niu, Patrick Flynn and **Adam Czajka**, "Hallucinated Heartbeats: Anomaly-Aware Remote Pulse Estimation," The 16th International Joint Conference on Biomedical Engineering Systems and Technologies – Volume 4: BIOSIGNALS, ISBN 978-989-758-631-6, pp. 106-117, Lisbon, Portugal, February 16-18, 2023 (**shortlisted for best student paper award**)

[C-2023-2] Aidan Boyd[@], Patrick Tinsley[@], Kevin Bowyer, **Adam Czajka**, "The Value of AI Guidance in Human Examination of Synthetically-Generated Faces," The Thirty-Seventh Conference on Artificial Intelligence (AAAI), Washington, DC, USA, February 7-14, 2023; pre-print available at `https://arxiv.org/abs/2208.10544`, 2022 (**selected for oral presentation**)

[C-2023-1] Siamul Karim Khan[@], Patrick Tinsley[@], **Adam Czajka**, "DeformIrisNet: An Identity-Preserving Model of Iris Texture Deformation," The IEEE/CVF Winter Conf. on Applications of Computer Vision (WACV), Waikoloa, Hawaii, 2023; pre-print available at `https://arxiv.org/abs/2208.03138`, 2022

[C-2022-8] Aidan Boyd[@], Daniel Moreira, Andrey Kuehlkamp, Kevin Bowyer, **Adam Czajka**, "Human Saliency-Driven Patch-based Matching for Interpretable Post-mortem Iris Recognition," xAI4Biometrics at WACV 2023 – 3rd Workshop on Explainable & Interpretable Artificial Intelligence for Biometrics, Waikoloa, Hawaii, 2023; pre-print available at `https://arxiv.org/abs/2208.03138`, 2022 (**best presentation award**)

[C-2022-7] Patrick Tinsley[@], **Adam Czajka**, Patrick Flynn, "Haven't I Seen You Before? Assessing Identity Leakage in Synthetic Irises," The IEEE/IAPR International Joint Conference on Biometrics (IJCB), Special Session on Synthetic Data in Biometrics, October 10-13, 2022, Abu Dhabi, United Arab Emirates; pre-print available at `https://arxiv.org/abs/2211.05629`

[C-2022-6] Aidan Boyd[@], Patrick Tinsley[@], Kevin Bowyer, **Adam Czajka**, "CYBORG: Blending Human Saliency Into the Loss Improves Deep Learning," The IEEE/CVF Winter Conf. on Applications of Computer Vision (WACV), Waikoloa, Hawaii, 2023; pre-print available at `https://arxiv.org/abs/2112.00686`

[C-2022-5] Jeremy Speth[@], Nathan Vance, Patrick Flynn, Kevin Bowyer, **Adam Czajka**, "Remote Pulse Estimation in the Presence of Face Masks," The 5th International Workshop on Computer Vision for Physiological Measurement (CVPM 2022); pre-print available at `https://arxiv.org/abs/2101.04096`

[C-2022-4] Andrey Kuehlkamp[+], Aidan Boyd[@], **Adam Czajka**, Kevin Bowyer, Patrick Flynn, Dennis Chute, Eric Benjamin, "Interpretable Deep Learning-Based Forensic Iris Segmentation and Recognition," XAI4Biometrics, IEEE WACV Workshop on Explainable & Interpretable Artificial Intelligence for Biometrics, Waikoloa, Hawaii, 2022

[C-2022-3] Lucas Parzianello[@] and **Adam Czajka**, "Saliency-Guided Textured Contact Lens-Aware Iris Recognition," IEEE WACV Workshop on Manipulation, Adversarial and Presentation Attacks in Biometrics, Waikoloa, Hawaii, 2022

[C-2022-2] Aidan Boyd[@], Kevin Bowyer, **Adam Czajka**, "Human-Aided Saliency Maps Improve Generalization of Deep Learning," The IEEE/CVF Winter Conf. on Applications of Computer Vision (WACV), Waikoloa, Hawaii, 2022; pre-print available at `https://arxiv.org/abs/2105.03492`

[C-2022-1] Jeremy Speth[@], Nathan Vance, **Adam Czajka**, Kevin W. Bowyer, Diane Wright, Patrick Flynn, "Digital and Physical-World Attacks on Remote Pulse Detection," The IEEE/CVF Winter Conf. on Applications of Computer Vision (WACV), Waikoloa, Hawaii, 2022; pre-print available at `https://arxiv.org/pdf/2110.11525.pdf`

[C-2021-2] Jeremy Speth[@], Nathan Vance, **Adam Czajka**, Kevin W. Bowyer, Diane Wright, Patrick Flynn, "Deception Detection and Remote Physiological Monitoring: A Dataset andBaseline Experimental Results," International Joint Conference on Biometrics (IJCB), Aug. 4-7, 2021, Shenzhen, China; pre-print available at `https://arxiv.org/abs/2106.06583`

[C-2021-1] Patrick Tinsley[@], Patrick Flynn, **Adam Czajka**, "This Face Does Not Exist... But It Might Be Yours! Identity Leakage in Generative Models," The IEEE/CVF Winter Conf. on Applications of Computer Vision (WACV), Waikoloa, Hawaii, 2021; pre-print available at `https://arxiv.org/abs/2101.05084`

[C-2020-4] Priyanka Das, Joseph McGrath[*], Zhaoyuan Fang[*], Aidan Boyd[@], Ganghee Jang, Amir Mohammadi, Sandip Purnapatra, David Yambay, Sebastien Marcel, Mateusz Trokielewicz[@], Piotr Maciejewicz, Kevin Bowyer, **Adam Czajka**, Stephanie Schuckers, Juan Tapia, Sebastian Gonzalez, Meiling Fang, Naser Damer, Fadi Boutros, Arjan Kuijper, Renu Sharma, Cunjian Chen, Arun Ross, "Iris Liveness Detection Competition (LivDet-Iris) – The 2020 Edition," The IEEE/IAPR International Join Conference on Biometrics (IJCB), Sept. 28 – Oct. 1, 2020, Houston, USA; pre-print available at `https://arxiv.org/abs/2009.00749`

[C-2020-3] Zhaoyuan Fang[*] and **Adam Czajka**, "Open Source Iris Recognition Hardware and Software with Presentation Attack Detection," The IEEE/IAPR International Join Conference on Biometrics (IJCB), Sept. 28 – Oct. 1, 2020, Houston, USA; pre-print available at `https://arxiv.org/abs/2008.08220`

[C-2020-2] Aidan Boyd[@], **Adam Czajka**, Kevin Bowyer, "Are Gabor Kernels Optimal for Iris Recognition?" The IEEE/IAPR International Join Conference on Biometrics (IJCB), Sept. 28 – Oct. 1, 2020, Houston, USA; pre-print available at `https://arxiv.org/abs/2002.08959`

[C-2020-1] Mateusz Trokielewicz[@], **Adam Czajka**, Piotr Maciejewicz, "Post-Mortem Iris Recognition Resistant to Biological Eye Decay Processes," The IEEE/CVF Winter Conf. on Applications of Computer Vision (WACV), Snowmass village, Colorado, March 2-5, 2020; pre-print available at `https://arxiv.org/abs/1912.02512`

[C-2019-8] Mateusz Trokielewicz[@], **Adam Czajka**, Piotr Maciejewicz, "Perception of Image Features in Post-Mortem Iris Recognition: Humans vs Machines" The 10th IEEE Int. Conference on Biometrics: Theory, Applications and Systems (BTAS), Tampa, FL, USA, 2019

[C-2019-7] Aidan Boyd[@], **Adam Czajka**, Kevin Bowyer, "Deep Learning-Based Feature Extraction in Iris Recognition: Use Existing Models, Fine-tune or Train From Scratch?" The 10th IEEE Int. Conference on Biometrics: Theory, Applications and Systems (BTAS), Tampa, FL, USA, 2019

[C-2019-6] Jeffery Kinnison, Mateusz Trokielewicz[@], Camila Carballo, **Adam Czajka**, Walter Scheirer, "Learning-Free Iris Segmentation Revisited: A First Step Toward Fast Volumetric Operation Over Video Samples," The 12th IAPR Int. Conference On Biometrics (ICB), 4-7 June 2019, Crete, Greece; pre-print available at `https://arxiv.org/abs/1901.01575`

[C-2019-5] Daniel Kerrigan[*], Mateusz Trokielewicz[@], **Adam Czajka**, Kevin Bowyer, "Iris Recognition with Image Segmentation Employing Retrained Off-the-Shelf Deep Neural Networks," The 12th IAPR Int. Conference On Biometrics (ICB), 4-7 June 2019, Crete, Greece; pre-print available at `https://arxiv.org/abs/1901.01028`

[C-2019-4] Suraj Mishra, **Adam Czajka**, Peixian Liang, Danny Z. Chen, X. Sharon Hu, "CC-Net: Image Complexity Guided Network Compression for Biomedical Image Segmentation," The IEEE Int. Symposium on Biomedical Imaging (ISBI), Venice, Italy, April 8-11, 2019; pre-print available at `https://arxiv.org/abs/1901.01578`

[C-2019-3] **Adam Czajka**, Zhaoyuan Fang[*], Kevin W. Bowyer, "Iris Presentation Attack Detection Based on Photometric Stereo Features," The IEEE/CVF Winter Conf. on Applications of Computer Vision (WACV), Waikoloa Village, Hawaii, January 7-11, 2019; pre-print available at `https://arxiv.org/abs/1811.07252`; patent: [P-2019-1]

[C-2019-2] Daniel Moreira[+], Mateusz Trokielewicz[@], **Adam Czajka**, Kevin W. Bowyer, Patrick Flynn, "Performance of Human Examiners in Iris Recognition: The Impact of Iris Condition and Annotation-driven Verification," The IEEE/CVF Winter Conf. on Applications of Computer Vision (WACV), Waikoloa Village, Hawaii, January 7-11, 2019; pre-print available at `https://arxiv.org/abs/1807.05245`

[C-2019-1] **Adam Czajka**, Daniel Moreira[+], Kevin W. Bowyer, Patrick Flynn, "Domain-Specific Human-Inspired Binarized Statistical Image Features for Iris Recognition," The IEEE/CVF Winter Conf. on Applications of Computer Vision (WACV), Waikoloa Village, Hawaii, January 7-11, 2019; pre-print available at `https://arxiv.org/abs/1807.05248`

[C-2018-3] **Adam Czajka**, Mateusz Trokielewicz[@], "Presentation Attack Detection for Cadaver Irises," The 9th IEEE Int. Conference on Biometrics: Theory, Applications and Systems (BTAS), Los Angeles, CA, USA, 2018; pre-print available at `https://arxiv.org/abs/1807.04058`

[C-2018-2] Mateusz Trokielewicz[@], **Adam Czajka**, "Data-Driven Segmentation of Post-mortem Iris Images," 6th IAPR/IEEE Int. Workshop on Biometrics and Forensics (IWBF), June 7, 8 2018, Sassari, Italy; pre-print available at `https://arxiv.org/abs/1807.04154`

[C-2018-1] Ewelina Bartuzi, Katarzyna Roszczewska, Andrzej Pacut, **Adam Czajka**, "Unconstrained Biometric Recognition based on Thermal Hand Images," 6th IAPR/IEEE Int. Workshop on Biometrics and Forensics (IWBF), June 7, 8 2018, Sassari, Italy

[C-2017-2] David Yambay, Benedict Becker[*], Naman Kohli, Daksha Yadav, **Adam Czajka**, Kevin W. Bowyer, Stephanie Schuckers, Richa Singh, Mayank Vatsa, Afzel Noore, Diego Gragnaniello, Carlo Sansone, Luisa Verdoliva, Lingxiao He, Yiwei Ru, Haiqing Li, Nianfeng Liu, Zhenan Sun, Tieniu Tan, "LivDet iris 2017 – Iris liveness detection competition 2017," The IEEE Int. Joint Conference on Biometrics (IJCB), Denver, CO, USA, 2017, pp. 733-741, 2017, doi: 10.1109/BTAS.2017.8272763

[C-2017-1] David Yambay, Brian Walczak, Stephanie Schuckers, **Adam Czajka**, "LivDet-Iris 2015 – Iris Liveness Detection Competition 2015," The IEEE Int. Conference on Identity, Security and Behavior Analysis (ISBA), New Delhi, India, February 22nd – 24th, 2017

[C-2016-3] Mateusz Trokielewicz[@], **Adam Czajka**, Piotr Maciejewicz, "Iris Recognition under Biologically Troublesome Conditions – Effects of Aging, Diseases and Post-mortem Changes," The 10th Int. Joint Conference on Biomedical Engineering Systems and Technologies BIOSIGNALS (BIOSTEC), Porto, Portugal, 2017, Vol. 4, pp. 253-258, ISBN 978-989-758-212-7

[C-2016-2] Mateusz Trokielewicz[@], **Adam Czajka**, Piotr Maciejewicz, "Human Iris Recognition in Post-mortem Subjects: Study and Database," The 8th IEEE Int. Conference on Biometrics: Theory, Applications and Systems (BTAS), September 6–9, 2016, Buffalo, NY, USA, pp. 1–6, DOI: 10.1109/BTAS.2016.7791175

[C-2016-1] Mateusz Trokielewicz[@], **Adam Czajka**, Piotr Maciejewicz, "Post-mortem Human Iris Recognition," The 9th IAPR Int. Conference on Biometrics (ICB), June 13 - 16, 2016, Halmstad, Sweden, pp. 1–6, DOI: 10.1109/ICB.2016.7550073

[C-2015-4] **Adam Czajka**, Kevin W. Bowyer, "Statistical evaluation of up-to-three-attempt iris recognition," *The 7th IEEE Int. Conference on Biometrics: Theory, Applications and Systems (BTAS)*, pp. 1–6, September 8–11, 2015, Arlington, USA, DOI: 10.1109/BTAS.2015.7358797

[C-2015-3] Mateusz Trokielewicz[@], **Adam Czajka**, Piotr Maciejewicz, "Assessment of iris recognition reliability for eyes affected by ocular pathologies," *The 7th IEEE Int. Conference on Biometrics: Theory, Applications and Systems (BTAS)*, pp. 1–6, September 8–11, 2015, Arlington, USA, DOI: 10.1109/BTAS.2015.7358747 **(best paper award)**

[C-2015-2] **Adam Czajka**, Kevin W. Bowyer, "Statistical analysis of multiple presentation attempts in iris recognition," *The 2nd IEEE Int. Conference on Cybernetics (CYBCONF), Special Session on Reliable Biometrics (BIORELIABILITY 2015), Gdynia, Poland*, pp. 483–488, June 24–26, 2015, DOI: 10.1109/CYBConf.2015.7175982

[C-2015-1] Mateusz Trokielewicz[@], **Adam Czajka**, Piotr Maciejewicz, "Database of iris images acquired in the presence of ocular pathologies and assessment of iris recognition reliability for disease-affected eyes," *The 2nd IEEE Int. Conference on Cybernetics (CYBCONF 2015), Special Session on Reliable Biometrics (BIORELIABILITY), Gdynia, Poland*, pp. 495–500, June 24–26, 2015, DOI: 10.1109/CYBConf.2015.7175984

[C-2014-2] Mateusz Trokielewicz[@], **Adam Czajka**, Piotr Maciejewicz, "Cataract influence on iris recognition performance," *Proceedings of SPIE: Photonics Applications in Astronomy, Communications, Industry, and High-Energy Physics Experiments*, Vol. 9290, November 25, 2014, DOI: 10.1117/12.2076040

[C-2014-1] David Yambay, James Doyle, Kevin W. Bowyer, **Adam Czajka**, Stephanie Schuckers, "LivDet-iris 2013 – Iris Liveness Detection Competition 2013," *The IEEE Int. Joint Conference on Biometrics (IJCB)*, Clearwater, Florida, USA, pp. 1–8, 29 September – 2 October 2014, DOI: 10.1109/ BTAS.2014.6996283

[C-2013-3] **Adam Czajka**, "Database of Iris Printouts and its Application: Development of Liveness Detection Method for Iris Recognition," *The 18th IEEE Int. Conference on Methods and Models in Automation and Control (MMAR)*, Miedzyzdroje, Poland, pp. 28–33, August 26–29, 2013, DOI: 10.1109/MMAR.2013.6669876

[C-2013-2] **Adam Czajka**, Paweł Bulwan, "Biometric verification based on hand thermal images," *The 6th IAPR Int. Conference on Biometrics (ICB)*, Madrid, Spain, pp. 1–6, June 4–7, 2013, DOI: 10.1109/ICB.2013.6612982

[C-2013-1] **Adam Czajka**, "Template Ageing in Iris Recognition," in Sergio Alvarez, Jordi Sole-Casals, Ana L. N. Fred, Hugo Gamboa (Ed.): *BIOSIGNALS – Proceedings of the Int. Conference on Bio-inspired Systems and Signal Processing, Barcelona, Spain, February 11–14, 2013*, pp. 70–78, SciTePress 2013, ISBN 978-989-8565-36-5

[C-2008-2] Raul Sanchez-Reillo, Raul Alonso-Moreno, **Adam Czajka**, Young-Bin Kwon, "Automatic Remote Evaluation System for Biometric Testing," *The 10th Int. Conference on Control, Automation, Robotics and Vision (ICARCV)*, Hanoi, pp. 1137–1143, December 17–20, 2008, DOI: 10.1109/ ICARCV.2008.4795681

[C-2008-1] **Adam Czajka**, Andrzej Pacut, "Replay attack prevention for iris biometrics," *The 42nd Annual 2008 IEEE Int. Carnahan Conference on Security Technology (ICCST)*, Prague, Czech Republic, pp. 247–253, October 13–16, 2008, DOI: 10.1109/CCST.2008.4751309

[C-2007-1] **Adam Czajka**, Przemek Strzelczyk, Marcin Chochowski, Andrzej Pacut, "Iris recognition with match-on-card," *The 15th European Signal Processing Conference (EUSIPCO)*, Poznań, Poland, pp. 189–192, September 3–7, 2007

[C-2006-4] Andrzej Pacut, **Adam Czajka**, "Aliveness detection for iris biometrics," *The 40th IEEE Int. Carnahan Conference on Security Technology (ICCST)*, Lexington, Kentucky, USA, pp. 122–129, October 17–19, 2006, DOI: 10.1109/CCST.2006.313440

[C-2006-3] Łukasz Stasiak, **Adam Czajka**, Przemysław Strzelczyk, Marcin Chochowski, Andrzej Pacut, "Od biometrii do bezpiecznej biometrii," *SECURE, Bezpieczeństwo – czas na przełom*, Warsaw, Poland, pp. 1–20, October 17-18, 2006

[C-2006-2] **Adam Czajka**, Przemek Strzelczyk, "Iris recognition with compact zero-crossing-based coding," Chapter in: Ryszard S. Romaniuk (Ed.), *Proceedings of SPIE: Photonics Applications in Astronomy, Communications, Industry, and High-Energy Physics Experiments*, Vol. 634723, October 12, 2006, DOI: 10.1117/12.714578

[C-2006-1] Andrzej Pacut, **Adam Czajka**, Przemek Strzelczyk, "Biometrics for Secure Remote Access," *Net-ID 2006 – Identity, Trust, Privacy and Security*, January 30-31, 2006, pp. 1-4, Berlin, 2006

[C-2005-1] Przemek Strzelczyk, Marcin Chochowski, Andrzej Pacut, **Adam Czajka**, "Biometryczna karta elektroniczna," *SECURE, Bezpieczeństwo – kto ponosi odpowiedzialność*, October 25-26, 2005, Warsaw, Poland, Vol. 2, pp. 134–143, 2005

[C-2004-1] Andrzej Pacut, **Adam Czajka**, "Biometria w Europie – Projekt BioSec," *SECURE 2004*, Warsaw, Poland

[C-2003-1] **Adam Czajka**, Andrzej Pacut, "Biometryczna weryfikacja tożsamości – systemy komercyjne i prototypy," *SECURE*, Warsaw, Poland, Vol. 2, pp. 121–131, November 5–6, 2003

[C-2002-3] **Adam Czajka**, Andrzej Pacut, "Zak's transform for automatic identity verification," *The 4th Int. Conference on Recent Advances in Soft Computing (RASC)*, December 12–13, 2002, Nottingham, United Kingdom, pp. 374–379, 2002

[C-2002-2] **Adam Czajka**, Andrzej Pacut, "Neural networks for signature classification and identity verification," *SECURE*, Warsaw, Poland, Vol. 1, pp. 1–7, November 6–7, 2002

[C-2002-1] **Adam Czajka**, Andrzej Pacut, "Biometria tęczówki oka," *Techniki Komputerowe, Biuletyn Informacyjny*, No. 1/2002, pp. 5–18, ISSN: 0239-8044, Instytut Maszyn Matematycznych, Warsaw, Poland, 2002

[C-2001-2] **Adam Czajka**, Andrzej Pacut, "Rozpoznawanie podpisów odręcznych jako przykład systemu weryfikacji tożsamości," *Techniki Komputerowe, Biuletyn Informacyjny*, No. 1/2001, pp. 7–24, ISSN: 0239-8044, Instytut Maszyn Matematycznych, Warsaw, Poland, 2001

[C-2001-1] Andrzej Pacut, **Adam Czajka**, "Recognition of Human Signatures," *The IEEE-INNS-ENNS Int. Joint Conference on Neural Networks (IJCNN)*, Washington D.C., USA, Vol. 2, pp. 1560–1564, 2001

8.7 Non-refereed Journals

[N-2009-7] **Adam Czajka**, "Biometria," Chapter 1.2 in: Remigiusz W. Kaszubski (Ed.), "Biometria w bankowości i administracji publicznej," pp. 9–10, Związek Banków Polskich, Warsaw, Poland, 2009 **(invited chapter)**

[N-2009-6] **Adam Czajka**, Andrzej Pacut, "Biometria podpisu odręcznego," Chapter 2.2 in: Remigiusz W. Kaszubski (Ed.), "Biometria w bankowości i administracji publicznej," pp. 15–16, Związek Banków Polskich, Warsaw, Poland, 2009 **(invited chapter)**

[N-2009-5] **Adam Czajka**, Andrzej Pacut, "Biometria tęczówki," Chapter 2.3 in: Remigiusz W. Kaszubski (Ed.), "Biometria w bankowości i administracji publicznej," pp. 16–18, Związek Banków Polskich, Warsaw, Poland, 2009 **(invited chapter)**

[N-2009-4] **Adam Czajka**, Andrzej Pacut, "Biometria dłoni," Chapter 2.5 in: Remigiusz W. Kaszubski (Ed.), "Biometria w bankowości i administracji publicznej," pp. 19–20, Związek Banków Polskich, Warsaw, Poland, 2009 **(invited chapter)**

[N-2009-3] **Adam Czajka**, Andrzej Pacut, "Bezpieczeństwo biometrii," Chapter 3 in: Remigiusz W. Kaszubski (Ed.), "Biometria w bankowości i administracji publicznej," pp. 22–28, Związek Banków Polskich, Warsaw, Poland, 2009 **(invited chapter)**

[N-2009-2] Andrzej Pacut [80%, **Adam Czajka**, "Standaryzacja biometrii," Chapter 4 in: Remigiusz W. Kaszubski (Ed.), "Biometria w bankowości i administracji publicznej," pp. 29–33, Związek Banków Polskich, Warsaw, Poland, 2009 **(invited chapter)**

[N-2009-1] **Adam Czajka**, Andrzej Pacut, "SDK for Iris Recognition," *NASK Review 2009*, pp. 34–39, 2009

[N-2007-1] Andrzej Pacut, **Adam Czajka**, Przemysław Strzelczyk, Marcin Chochowski, "Systemy biometrii," *Biuletyn NASK*, No. 1/2007, pp. 36–39, ISSN 1509-3603, 2007

[N-2006-3] Andrzej Pacut, **Adam Czajka**, Joanna Putz-Leszczyńska, Łukasz Stasiak, Rafał Wardziński, "Biometric methods," *NASK Review 2006*, pp. 31–35, 2006

[N-2006-2] Andrzej Pacut, **Adam Czajka**, Przemysław Strzelczyk, Marcin Chochowski, "Biometric systems," *NASK Review 2006*, pp. 36–39, 2006

[N-2006-1] Andrzej Pacut, **Adam Czajka**, Joanna Putz-Leszczyńska, Łukasz Stasiak, Rafał Wardziński, "Metody biometrii," *Biuletyn NASK*, No. 3/2006, pp. 35–39, ISSN 1509-3603, 2006

[N-2005-1] Andrzej Pacut, **Adam Czajka**, "Biometria w Europie – Projekt BioSec," *Biuletyn NASK*, No. 1/2005, pp. 26-30, ISSN 1509-3603, 2005

[N-2003-3] Andrzej Pacut, **Adam Czajka**, "Tęczówka, palec, dłoń ... Biometryczne metody identyfikacji tożsamości," *Biuletyn NASK*, Sept-Oct-Nov 2003, pp. 14-16, 2003

[N-2003-2] Andrzej Pacut, **Adam Czajka**, "Twój PIN to TY. Metody biometryczne weryfikacji tożsamości, część I," *Biuletyn NASK*, Jan-Feb 2003, pp. 21-26, ISSN 1509-3603, 2003

[N-2003-1] Andrzej Pacut, **Adam Czajka**, "Twój PIN to TY. Biometryczne metody weryfikacji tożsamości, część II," *Biuletyn NASK*, Mar-Apr-May 2003, pp. 18-24, ISSN 1509-3603, 2003

[N-2001-1] **Adam Czajka**, "Biometric identification methods," *Konferencja i Warsztaty SecurNet IV*, April 3-6, 2001, Stryków, Poland, Proceedings, pp. 1–11, IDG Poland, 2001

8.8 ArXiv-only or under review

[R-2023-1] Colton R. Crum[@], **Adam Czajka**, "MENTOR: Human Perception-Guided Pretraining for Increased Generalization," `https://arxiv.org/abs/2310.19545`, Oct. 2023

[R-2023-2] Aidan Boyd[@], Patrick Tinsley[@], Kevin Bowyer, **Adam Czajka**, "Training Better Deep Learning Models Using Human Saliency," Feb. 2024 (under review for *IEEE Transactions on Pattern Analysis and Machine Intelligence*)

[R-2023-3] Timothy Redgrave[@], **Adam Czajka**, "Salient Information Preserving Adversarial Training Improves Model Performance," March 2024

[R-2023-4] Jeremy Speth[@], Nathan Vance, Benjamin Sporrer, Lu Niu, Patrick Flynn, **Adam Czajka**, "MSPM: A Multi-Site Physiological Monitoring Dataset for Remote Pulse, Respiration, and Blood Pressure Estimation," Feb. 2024, `https://arxiv.org/abs/2402.02224`

[R-2023-5] Siamul Karim Khan[@], Patrick Tinsley[@], Mahsa Mitcheff[@], Patrick Flynn, Kevin W. Bowyer, **Adam Czajka**, "EyePreserve: Identity Preserving Iris Synthesis," Dec. 2023, `https://arxiv.org/abs/2312.12028`

[R-2018-1] Joseph McGrath*, Kevin W. Bowyer, **Adam Czajka**, "Open Source Presentation Attack Detection Baseline for Iris Recognition," 2018, `https://arxiv.org/abs/1809.10172`

8.9 Public Databases Co-Authored

[DB1] **Joint Biometric Dataset – LivDet 2013 Liveness Detection-Iris – Warsaw Subset.** This dataset was prepared for the first international competition on iris presentation attack detection (LivDet-Iris, `livdet.org`), co-organized jointly by Clarkson University, Warsaw University of Technology and University of Notre Dame. I estimate my overall contribution to the preparation of this set as 90%.
[distributed to 48 institutions from: Brazil, Canada, China, Egipt, Germany, India, Iran, Ireland, Italy, Malaysia, Norway, Russia, Saudi Arabia, South Korea, United Kingdom, USA; papers presenting this dataset: [C-2013-3, C-2014-1]]

[DB2] **Joint Biometric Dataset – LivDet 2015 Liveness Detection-Iris – Warsaw Subset.** This is an extension of [DB1] and was used in the second edition of the LivDet-Iris competition.
[distributed to 25 institutions from: Brazil, Canada, China, Egipt, Germany, India, Jordan, Malaysia, Russia, Saudi Arabia, South Korea, USA; paper presenting this dataset: [C-2017-1]]

[DB3] **Joint Biometric Dataset – LivDet 2017 Liveness Detection-Iris – Warsaw Subset.** This is an extension of [DB2]. An important novelty of [DB3], when compared to [DB1] and [DB2], is that test images were acquired by a different sensor and with different quality. This allows for evaluations in more realistic scenarios when the quality of test samples is unknown.
[distributed to 8 institutions from: China, Germany, Italy, South Korea, USA; paper presenting this dataset: [C-2017-2]]

[DB4] **Warsaw-BioBase-Disease-Iris v1.0.** This dataset encompasses iris images taken from subjects suffering from various eye diseases: cataract, acute glaucoma, posterior and anterior synechiae, retinal detachment, rubeosis iridis, corneal vascularization, iris damage and atrophy, and others. I estimate my contribution to construction of this dataset as 30%.
[distributed to 1 institution from USA; paper presenting this dataset: [C-2015-1]]

[DB5] **Warsaw-BioBase-Disease-Iris v2.1.** This set is an extension of [DB4].
[distributed to 11 institutions from Brazil, Germany, India, Ireland, Jordan, Malaysia, Philippines, Poland, USA; paper presenting this dataset: [C-2015-3]]

[DB6] **Warsaw-BioBase-Post-Mortem-Iris v1.0.** To my best knowledge, this first database worldwide of iris images taken after death. I estimate my contribution to construction of this dataset as 30%.
[distributed to 1 institution from USA; paper presenting this dataset: [C-2016-2]]

[DB7] **Warsaw-BioBase-Post-Mortem-Iris v2.0.** Extension of the *Warsaw-BioBase-Post-Mortem-Iris v1.0* dataset. I estimate my contribution to construction of this dataset as 30%.
[paper presenting this dataset: [A-2019-1]]

[DB8] **Warsaw-BioBase-Post-Mortem-Iris v3.0.** To my best knowledge, this is the largest research database worldwide of iris images taken after death. I estimate my contribution to construction of this dataset as 30%.
[paper presenting this dataset: [A-2020-4]]

[DB9] **Warsaw-BioBase-Pupil-Dynamics v1.0.** To my best knowledge, this is the first database worldwide offering dynamic measurements of the pupil under visible light stimuli. I estimate my contribution to construction of this dataset as 60%.
[distributed to 2 institutions from India and USA; papers presenting this dataset: [A-2015-1]]

[DB10] **Warsaw-BioBase-Pupil-Dynamics v2.1.** Extension of the *Warsaw-BioBase-Pupil-Dynamics v1.0* dataset. I estimate my contribution to construction of this dataset as 50%.
[paper presenting this dataset: [B-2016-1]]

[DB11] **Warsaw-BioBase-Pupil-Dynamics v3.0.** Iris NIR videos collected under visible light stimuli. I estimate my contribution to construction of this dataset as 30%.
[paper presenting this dataset: [C-2019-6]]

[DB12] **Notre Dame Photometric Stereo Iris Dataset.** This database offers iris images (with and without contact lenses) of the same eyes captured shortly one after another with illumination coming from two different locations. 5,796 iris images in total were acquired by the LG IrisAccess 4000 sensor from 119 subjects. I estimate my contribution to construction of this dataset as 50%.
[paper presenting this dataset: [C-2019-3]]

[DB13] **NDIris3D.** This database dataset contains a total of 6,850 images: 3,488 images acquired by LG4000, and 3,362 images acquired by AD100 from the same 89 subjects with and without textured contact lenses, and for varying illumination setups in both LG4000 and AD100 sensors. I estimate my contribution to construction of this dataset as 50%.
[paper presenting this dataset: [A-2021-1]]

[DB14] **Deception Detection and Physiological Monitoring (DDPM).** The DDPM dataset captures an interview scenario, in which the interviewee attempts to deceive the interviewer on selected responses. The interviewee is recorded in visible, near-infrared, and long-wave infrared lights, along with cardiac pulse, blood oxygenation, and audio. I estimate my contribution to construction of this dataset as 20%.
[paper presenting this dataset: [C-2021-2]]

[DB15] **Synthetic Forensic Iris (UND-SFI-2024).** The UND-SFI-2024 dataset contains images of iris images that resemble those captured from deceased subjects by an equipment compliant with ISO/IEC 19794-6. The data is categorized into 18 disjoint ranges of PMI (Post-Mortem Interval). In each range, there are 10,000 images

representing 1,000 non-existent identities. There are 10 images per "identity" that may be considered as same-eye images. I estimate my contribution to construction of this dataset as 50%.
[paper presenting this dataset: [C-2024-1]]

[DB16] **Masked Physiological Monitoring (MPM).** The Masked Physiological Monitoring (MPM) dataset contains 159 video recordings from 54 human subjects wearing protective face coverings. Each recording consists of a 1920x1080 resolution losslessly compressed RGB video recorded at 90 frames per second with simultaneous PPG collected from two fingertip oximeters. Each recording lasts a minimum of 3 minutes where subjects converse, move their head, and sit still, resulting in over 8 hours of data. I estimate my contribution to construction of this dataset as 20%.
[paper presenting this dataset: [C-2022-5]]

[DB17] **Multi-Site Physiological Monitoring (MSPM).** The Multi-Site Physiological Monitoring (MSPM) dataset consists of 103 sessions, each lasting just over 14 minutes on average, in which human subjects engage in a variety of activities designed to elicit interesting physiological phenomena such as a breath hold to increase blood pressure, or to provide a challenging context for performing remote photoplethysmography (rPPG) such as an adversarial attack. Sessions were recorded in RGB from three different angles and near-infrared zoomed in on the eyes, along with cardiac pulse at ten sites across the body, blood oxygenation, and blood pressure using a cuff-based monitor. I estimate my contribution to construction of this dataset as 20%.
[paper presenting this dataset: [C-2023-5]]

[DB18] **UND AAAI 2023.** The UND AAAI 2023 Dataset contains (a) images of live (authentic) faces, (b) images of faces synthetically generated by deep learning-based generative adversarial networks, and (c) regions annotated by humans solving the synthetic face detection task, indicating features supporting their decisions. I estimate my contribution to construction of this dataset as 50%.
[paper presenting this dataset: [C-2023-2]]

[DB19] **UND WACV 2023 CYBORG.** The UND WACV 2023 CYBORG Dataset contains (a) images of live (authentic) faces, (b) images of faces synthetically generated by deep learning-based generative adversarial networks, and (c) regions annotated by humans solving the synthetic face detection task, indicating features supporting their decisions. I estimate my contribution to construction of this dataset as 50%.
[paper presenting this dataset: [C-2022-6]]

[DB20] **LivDet-Iris-2023-Part1** LivDet-Iris-2023 dataset contains images of live (authentic) irises and images of irises synthetically-generated by deep learning-based generative adversarial networks. The primary goal of creating and sharing this dataset is to allow researchers to participate in LivDet-Iris 2023 competition by delivering to the organizers the presentation attack detection scores associated with these images. After the LivDet-Iris 2023 competition is concluded, this dataset may be a useful benchmark allowing to compare future solutions with those submitted to the competition. I estimate my contribution to construction of this dataset as 20%.
[paper presenting this dataset: [C-2023-8]]

[DB21] **ND Variable Iris Image Quality Release 2 Non-sequestered: ND VII-Q R2.** This data set is a non-sequestered partition of the VII-Q dataset, and it contains 4466 near-infrared (NIR) images of 203 distinct eyes (103 left and 100 right eyes) of 144 distinct human subjects. All data is de-identified. Assembly of this data set was supported by the US National Institute of Standards and Technology. I estimate my contribution to construction of this dataset as 50%.

9 Technical Presentations

9.1 Invited Lectures / Panels

The names and affiliations of the inviting persons are provided in brackets.

1. "IREX-10: Open-Source Algorithms" *Iris Experts Group – II (IEG)*, NIST, Gaithersburg, MD, June 15, 2023 (virtual event)
   [Dr. James R. Matey, National Institute of Standards and Technology]

2. "Investigation of possible gender bias in iris recognition and iris PAD" *Iris Experts Group – II (IEG)*, NIST, Gaithersburg, MD, June 15, 2023 (virtual event)
   [Dr. James R. Matey, National Institute of Standards and Technology]

3. Keynote: "Do you want a better biometric algorithm? Tell it where to look!" *World Biometrics Day*, Dubai, UAE, October 7, 2022
   [Dr. Barbara Mróz-Gorgoń, University of Wroclaw, Poland]

4. "Do you want a better iris presentation attack detection method? Tell it where to look!" *Iris Experts Group – II (IEG)*, NIST, Gaithersburg, MD, June 23, 2022 (virtual event due to COVID)
   [Dr. James R. Matey, National Institute of Standards and Technology]

5. "Do you want a better AI model? Tell it where to look!," *AI Seminar Series*, Luddy Center for AI, Indiana University, Bloomington, IN, March 22, 2022
   [Dr. David Crandall, IU]

6. "Update on Notre Dame Efforts on Post-mortem Iris Recognition," *Iris Experts Group – II (IEG)*, NIST, Gaithersburg, MD, June 25, 2020
   [Dr. James R. Matey, National Institute of Standards and Technology]

7. "Update to the 2018 Notre Dame Survey on PAD: unseen attacks, PAD databases and open-source solutions," *Iris Experts Group – II (IEG)*, NIST, Gaithersburg, MD, June 25, 2020
   [Dr. James R. Matey, National Institute of Standards and Technology]

8. "Post-mortem iris: going beyond using off-the-shelf iris recognition methods," *Iris Experts Group – II (IEG)*, NIST, Gaithersburg, MD, June 27, 2019
   [Dr. James R. Matey, National Institute of Standards and Technology]

9. "Failure to Enroll rates – Panel" *Iris Experts Group – II (IEG)*, NIST, Gaithersburg, MD, June 27, 2019
   [Dr. James R. Matey, National Institute of Standards and Technology]

10. "Post-mortem Iris Recognition," *Iris Experts Group – II (IEG)*, NIST, Gaithersburg, MD, June 28, 2018
    [Dr. James R. Matey, National Institute of Standards and Technology]

11. "Postmortem Iris Recognition," *Biometric Working Group Meeting*, University of Notre Dame – London Gateway, UK, June 8, 2017
    [Dr. James Wayman, San Jose State University, USA and Prof. Kevin Bowyer, University of Notre Dame, USA]

12. "Is That Eyeball Alive or Dead?," *Scientific Seminar of the Biomedical Signal Analysis Lab*, Clarkson University, Potsdam, NY, February 3, 2017
    [Prof. Stephanie Schuckers, Clarkson University]

13. "Post-mortem Human Iris Recognition," *Biometrics 2016*, London, UK, October 20, 2016
    [Prof. Kevin W. Bowyer, University of Notre Dame]

14. "Post-mortem Human Iris Recognition," *Iris Experts Group – II (IEG)*, NIST, Gaithersburg, MD, June 28, 2016
    [Dr. James R. Matey, National Institute of Standards and Technology]

15. "Reliability of Iris Recognition," *Scientific Seminar of the Institute of Telecommunications and Computer Science*, UTP University of Science and Technology, Bydgoszcz, Poland, November 12, 2015
    [Prof. Michał Choraś, UTP]

16. "Presentation Attack Detection in iris recognition," Distinguished Lecturer during the *Norwegian Biometrics Laboratory Annual Workshop (NBLAW 2015)*, Gjøvik, Norway, March 2, 2015
    [Dr. Raghavendra Ramachandra, Norwegian University of Science and Technology, Norway]

17. "Presentation Attack Detetion (PAD) in iris recognition," *European Biometrics Symposium*, London, UK, February 25, 2015
    [Dr. Max Snijder, European Association for Biometrics, Netherlands]

18. "How to assess the iris aging efficiently?," *Biometric Consortium Conference (BCC 2013)*, Tampa, FL, September, 13–21, 2013; right after the lecture I was a panelist in the discussion on iris template aging
    [Dr. James R. Matey, National Institute of Standards and Technology]

9.2 Active Participation in Scientific Conferences, Seminars and Technical Meetings

Below I list scientific conferences on which I presented my research results (in addition to events listed in Sec. 9.1). I cite the presented papers in the brackets, where appropriate.

- 107th IAI International Educational Conference, "Do you want a better iris presentation attack detection AI algorithm? Tell it where to look!" National Harbor, Maryland, August 21, 2023
- xAI4Biometrics at WACV 2023 – 3rd Workshop on Explainable & Interpretable Artificial Intelligence for Biometrics, Waikoloa, Hawaii, January 7, 2023 (virtual) [C-2022-8]
- 106th IAI International Educational Conference, "Human-Machine Pairing for Post-Mortem Iris Recognition", Omaha, NE, August 3, 2022
- National Institute of Justice, Forensic Science Research and Development Symposium, "Software tool and methodology for enhancement of unidentified decedent systems with postmortem automatic iris recognition," March 2, 2022 (virtual)
- 105th IAI International Educational Conference, "Automatic Post-mortem Iris Recognition" (with Pat Flynn), Nashville, TN, August 1-7, 2021
- National Institute of Justice, Forensic Science Research and Development Symposium, "Post-mortem Iris Recognition," February 16, 2021
- European Association for Biometrics (EAB) Lunch-time Seminar Series, "Is That Eye Dead or Alive? Recognition of Presentation Attacks in Iris Biometrics," January 12, 2021
- 103rd IAI International Educational Conference, "Postmortem Iris Recognition," (with Pat Flynn), San Antonio, TX, August 3, 2018
- IEEE/CVF Winter Conf. on Applications of Computer Vision (WACV):
  2019 (Waikoloa Village, Hawaii, USA) [C-2019-3, C-2019-2, C-2019-1]
- IEEE Int. Conference on Biometrics: Theory, Applications and Systems (BTAS):
  2015 (Arlington, USA) [C-2015-4], 2018 (Los Angeles, USA) [A-2018-1, A-2017-1]
- IEEE Int. Conference on Cybernetics (CYBCONF):
  2015 (Gdynia, Poland) [C-2015-2]
- IEEE Workshop on Bio-Inspired Signal and Image Processing (BISIP):
  2014 and 2010 (Vilnius, Lithuania), 2008 (Warsaw, Poland)
- Int. Biometric Performance Conference (IBPC):
  2014, 2012 and 2010 (NIST, Gaithersburg, MD, USA)
- Int. Joint Conference on Biomedical Engineering Systems and Technologies (BIOSIGNALS):
  2013 (Barcelona, Spain) [B-2014-1, C-2013-1]
- IEEE Int. Conference on Methods and Models in Automation and Control (MMAR):
  2013 (Międzyzdroje, Poland) [C-2013-3]
- IAPR Int. Conference on Biometrics (ICB):
  2013 (Madrid, Spain) [C-2013-2]
- IEEE Int. Carnahan Conference on Security Technology (ICCST):
  2008 (Prague, Czech Republic) [C-2008-1]
- Joint Rough Set Symposium (JRS):
  2007 (Toronto, Canada) [A-2007-2]
- Identity, Trust, Privacy and Security (Net-ID):
  2006 (Berlin, Germany) [C-2006-1]
- Automatic Identification in Logistics – Scientific and Technical Symposium:
  2004 (Wrocław, Poland) [B-2004-2, B-2004-1]

- Cyberspace Security and Defense: Research Issues (NATO Advanced Research Workshop):
  2004 (Gdańsk, Poland) [B-2005-1]
- Int. Conference on Recent Advances in Soft Computing (RASC):
  2002 (Nottingham, UK) [C-2002-3]
- Biometrics:
  2002 and 2001 (Warsaw, Poland) [C-2002-1, C-2001-2]

9.3 Active Participation in Other Technical Conferences and Meetings

Below I list selected presentations during non-scientific meetings and conferences (in addition to events listed in Sec. 9.1 and 9.2). Where appropriate, original Polish titles are provided in brackets.

1. **Adam Czajka**, "Security of Biometric Sensors" (PL: "Bezpieczeństwo sensorów biometrycznych"), *AEGIS – Future of forensics and network security*, July 3, 2013, Warsaw, Poland
2. Panelist during *e-Economy Congress* (PL: *Kongres Gospodarki Elektronicznej*), June 18, 2013, Warsaw, Poland
3. **Adam Czajka**, "Presentation attack detection for iris recognition," *LG Technology Fair*, March 25, 2016, Warsaw, Poland
4. **Adam Czajka**, Andrzej Pacut, "Security of Iris Recognition: Presentation Attack Detection" (PL: "Bezpieczeństwo biometrii tęczówki: testowanie żywotności oka"), *Biometrics in Law and Forensics* (PL: *Biometria w prawie i kryminalistyce*), March 29, 2012, Warsaw, Poland
5. **Adam Czajka**, Andrzej Pacut, "Biometric Identification: Security or Privacy?" (PL: "Biometryczne rozpoznawanie tożsamości. Bezpieczeństwo czy prywatność?"), lecture for "University of the Third Age," May 5, 2011, Warsaw University of Technology, Warsaw, Poland
6. **Adam Czajka**, lecture on "Evaluation of Biometric Sensors and Systems: Platform of Secure Implementation of Biometrics" and panelist in "Biometrics in Banking," *Spring Biometric Summit*, April 14–15, 2011, Warsaw/Miedzeszyn, Poland
7. **Adam Czajka**, Andrzej Pacut, "Secure Implementation of Biometrics" (PL: "Bezpieczne implementacje biometrii"), *Documents and Law*, November 5, 2010, Warsaw, Poland
8. Andrzej Pacut, **Adam Czajka**, "Biometrics for Security and Security of Biometrics" (PL: "Biometria dla bezpieczeństwa i bezpieczeństwo biometrii"), *Meeting of the Cybernetics Committee of the Polish Academy of Sciences*, April 23, 2010, Bydgoszcz, Poland
9. **Adam Czajka**, "Secure Implementation of Biometrics" (PL: "Bezpieczna implementacja biometrii"), *Briefing of the Management Staff of the Police Academy in Szczytno*, October 1, 2009, Szczytno, Poland
10. **Adam Czajka**, "IEEE Poland Section," *Young Scientists and Current Research Challenges*, IV Technical Conference, September 23, 2009, Warsaw (invited as the member of the board of the IEEE Poland Section)
11. **Adam Czajka**, "Security and Biometrics" (PL: "Bezpieczeństwo a biometria"), *Spring Biometric Summit*, May 21–22, 2009, Warsaw/Miedzeszyn, Poland
12. **Adam Czajka**, "Biometric Security Products" (PL: "Biometryczne produkty bezpieczeństwa"), *SECURE 2008*, October 3, 2008, Warsaw, Poland
13. **Adam Czajka**, "Need for testing and certification of biometrics in Europe," *Meeting of the Focus Group on Biometrics*, September 29, 2008, London, UK
14. **Adam Czajka**, "IEEE Poland Section," *Young Scientists and Current Research Challenges*, III Technical Conference, September 24, 2008, Warsaw (invited as the member of the board of the IEEE Poland Section)
15. **Adam Czajka**, "Biometrics: security for information societies," twice: during *FP7 Inauguration*, November 21–23, 2006, Helsinki, Finland, and during *FP7 Inauguration*, November 17, 2006, Warsaw, Poland
16. **Adam Czajka**, "Biometric Identification – Future of Security" (PL: "Biometryczna identyfikacja – przyszłość bezpieczeństwa"), *CryptoCon 2006*, August 30–31, 2006, Warsaw, Poland
17. Demonstration of my iris recognition system with presentation attack detection during *Biometrics – Conference & Exhibition*, London, UK, 2006 – 2009

10 Professional Activities

10.1 Committees (at Notre Dame)

- Member:
  - ND College of Engineering Council (since September 2023)
  - ND CSE Graduate School, Admissions Committee (September 2018 – July 2023)
  - ND CSE Computing Resources Committee (since August 2020)
  - PhD Proposal Defense Committee (for 20+ students)
    and PhD Defense Committee (for 10+ students)

10.2 Committees (outside Notre Dame)

- Advisor:
  - Member of Technical Advisory Board, Asignio Inc., USA (since November 2019)
  - Advisor to the Deputy Director for Research, NASK, Poland (2019 – 2020)
- Vice President, Finances:
  - IEEE Biometrics Council (2019 – 2021; second term 2022 – 2023)
- Task Group Leader:
  - The Organization of Scientific Area Committees For Forensic Science (OSAC),
    Iris Task Group: Systems and Capture (since Oct. 2023)
- Expert:
  - Int. Standardization Com. (ISO), ISO/IEC JTC1 SC 37 on Biometrics (2011 – 2023)
  - CEN TC 224 WG 18 on "Interoperability of Biometric Recorded Data" (2015 – 2023)
  - Polish Standardization Com. (PKN), TC 309 on Biometrics (2009-2020)
  - Polish Standardization Com. (PKN), TC 182 on Information Security (2007 – 2017)
- Chair:
  - Polish Standardization Committee (PKN), TC 309 on Biometrics (2014 – 2018)

10.3 Conferences

- General Chair:
  - Workshop on Deepfakes and Presentation Attacks in Biometrics
    (WACV 2020 DeepFakes)
  - Special Session on Biometric Reliability, IEEE Int. Conference on Cybernetics
    (CYBCONF 2015)
- Program Chair:
  - Workshop on Explainable & Interpretable Artificial Intelligence for Biometrics
    (xAI4Biometrics at WACV 2023)
- Finance Chair:
  - IEEE/IAPR Int. Joint Conference on Biometrics (IJCB 2020, 2021, 2023)
  - IEEE Int. Conference on Automatic Face and Gesture Recognition (FG 2019, 2023, 2025)
- Special Session, Demo and Challenge Chair:
  - IEEE International Workshop on Information Forensics and Security (WIFS 2024)
- Workshop Chair:
  - IEEE/CVF Winter Conference on Applications of Computer Vision (WACV 2023)
- Sponsorship Chair:
  - IEEE Biometrics: Theory, Applications and Systems (BTAS 2019)
- Publicity Chair:
  - IEEE/IAPR Int. Joint Conference on Biometrics (IJCB 2017)
- Area Chair (iris recognition):
  - IAPR Int. Conference on Biometrics (ICB 2016 and 2018)
  - IEEE Int. Conference on Biometrics: Theory, Applications and Systems
    (BTAS 2015 and 2018)
  - IEEE/IAPR Int. Joint Conference on Biometrics (IJCB 2020)
- Associate Chair:
  - IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR 2024)
  - IEEE/CVF Winter Conference on Applications of Computer Vision (WACV 2023)

- Tutorials:
  – (Lead) "Human-Machine Pairing to Improve Biometric Recognition and Presentation Attack Detection" at IJCB, October 2022, Abu Dhabi, United Arab Emirates
  – (Lead) "Human-Machine Pairing to Improve Computer Vision" at WACV, January 2022, Waikoloa, HI, USA

10.4 Program Committee Member

- IEEE Int. Joint Conference on Neural Networks (IJCNN 2024)
- IEEE Int. Conference on Acoustics, Speech, and Signal Processing (ICASSP 2023)
- IEEE/CVF Conference on Computer Vision and Pattern Recognition (CVPR 2020, 2021, 2022, 2023)
- IEEE Int. Conference on Computer Vision (ICCV 2021, 2023)
- IEEE European Conference on Computer Vision (ECCV 2022)
- IEEE/CVF Winter Conference on Applications of Computer Vision (WACV 2019, 2020, 2021, 2022, 2024)
- Conference on Graphics, Patterns and Images (SIBGRAPI 2021)
- Workshop on Demographic Variation in the Performance of Biometric Systems (WACV 2020 Demographics)
- IEEE Int. Conference on Automatic Face and Gesture Recognition (FG 2020, 2022, 2023, 2024)
- IEEE Int. Workshop on Biometrics and Forensics (IWBF 2020)
- Int. Symposium on Visual Computing (ISVC 2018, 2019)
- IEEE/IAPR Int. Joint Conference on Biometrics (IJCB 2017, 2020, 2021, 2022, 2023, 2024)
- Int. Workshop on The Future of Biometrics beyond Rec. and Anti-Spoofing (2019)
- Int. Workshop on Multimedia Forensics and Security (MFSec 2017)
- IEEE Int. Conference on Identity, Security and Behavior Analysis (ISBA 2017)
- IAPR Int. Conference on Biometrics (ICB 2016, 2018, 2019)
- IEEE Int. Conference of the Biometrics Special Interest Group (BIOSIG 2013, 2014, 2015, 2016, 2017, 2018, 2021, 2022)
- Int. Conference on Bio-Inspired Systems and Signal Processing (BIOSIGNALS 2014, 2015, 2016, 2017, 2018, 2019, 2023, 2024)
- IEEE Int. Conference on Biometrics: Theory, Applications and Systems (BTAS 2015, 2016, 2018, 2019)
- IEEE Int. Conference on Cybernetics (CYBCONF 2015)
- Int. Conference on Image Processing & Communications (IP&C 2015)
- IEEE Workshop on Bio-Inspired Signal and Image Processing (BISIP 2008, 2010 and 2014)

10.5 Reviewing and Editing

- IEEE Transactions on Information Security and Forensics
  Senior Associate Editor, March 2023 – present
- Pattern Recognition (Elsevier)
  Associate Editor, June 2021 – present
- IEEE Access
  Associate Editor, April 2015 – April 2023
- IET Biometrics
  Member of the *Editorial Board*, May 2016 – December 2019
  Associate Editor, January 2020 – February 2023
- IEEE Biometrics Compendium
  Associate Editor, April – December 2019
  (the Compendium has been retired starting January 2020)
- Journal Review Service
  IEEE Transactions on Pattern Analysis and Machine Intelligence (T-PAMI); IEEE Transactions on Information Forensics and Security (T-IFS); IEEE Transactions on Biometrics, Behavior, and Identity Science (T-BIOM); IEEE Access; IET Image Processing; IET Computer Vision; IET Biometrics; Elsevier Pattern Recognition;

Elsevier Pattern Recognition Letters; Elsevier Journal of Visual Communication and Image Representation; EURASIP Journal on Information Security; Int. Journal of Biometrics; Machine Graphics & Vision; Elsevier Applied Soft Computing

- Project Reviews
  NSF Division of Information and Intelligent Systems (panelist, 2020); NSF Secure and Trustworthy Cyberspace (panelist, 2022); Ministry of Science and Higher Education, Poland; Foundation of Polish Science (FNP)
- PhD Dissertations
  Reviews for Universidad Carlos III de Madrid, Departamento de Tecnologia Electronica, Spain; Carleton University, Canada; University of Galway, Ireland; Warsaw University of Technology, Poland.
- Conference Review Service
  Czajka has been reviewing for multiple computer vision-, biometrics- and security-oriented conferences for almost two decades, including CVPR, ICCV, ECCV, WACV, IJCB, ICB, BTAS, BIOSIG, IWBF, ISBA, ISVC, ICASSP, BIOSIGNALS, FG and others.

11 Private Activities

- Licensed glider pilot (FAA)
- Licensed yacht skipper (PYA and ISSA)
- Art: amateur musician (classical guitar), painting (mainly dry pastel technique), photography