Gholamreza Anbarjafari (**Shahab**)

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Employment

Feb 2022–Present — **CEO**, *3S Holding*, Tartu, Estonia.
I am founder of 3S which is an AI boutique company consulting and developing AI solutions. It has clients such as LHV Pank (EE), LHV Bank (UK), Avokaado, BotGuard, FlowStep, EpicBrief, SimplifyHire, and BioIdenti.

March 2020–Present — **Chief Data Scientist/Director/Data and AI Lead**, *PwC Finland*, Helsinki, Finland.
I am Leading AI development in PwC Finland and consulting various industrial unites on DeepTech and utilisation of AI and Responsible AI. I am leading AI development for some Nordic clients. I am also leading PwC FI Metaverse practices.

Sep. 2020–present — **Visiting Professor**, *Yildiz Technical University*, Istanbul, Turkey.
Teaching Artificial Intelligent course for postgraduate students and consulting on smart city and digitalisation projects.

Sep. 2013–May 2024 — **Professor/Head of iCV Lab**, *University of Tartu*, Tartu, Estonia.
Leading scientist in human behaviour analysis; conducting research and development on data-driven AI solution for various DeepTech applications from FinTech and AgriTech to EduTech and SecurTech.
Consulting Estonian Police and Border Guard on border monitoring, automatic border crossing, and forensic.

April 2019–Jan. 2020 — **Visiting Professor/Reader**, *Loughborough University London*, London, UK.
Research on affective computing, self-driving autonomous cars, and human-machine interaction

March 2019–Aug 2021 — **Visiting Senior Scientist**, *Institute for Environmental Solutions*, Riga, Latvia.
(Part-Time) Research work on applied machine learning and image analysis for wild animal recognition

Sep. 2015–Aug. 2020 — **Assoc. Professor**, *Hasan Kalyoncu University*, Gaziantep, Turkey.
Conducting research and development on utilisation of AI on e-commerce; Leading funded project on 3D modelling and virtual fitting room.

Nov. 2017–June 2019 — **Data Scientist**, *GoSwift OÜ*, Tallinn, Estonia.
Research on data visualisation, feature extraction, and classification

2016–2019 — **Head of Technology**, *ReportAuto*, Tartu, Estonia.

Aug. 2011–July 2012 **Asst. Prof./Vice Dean**, *Hasan Kalyoncu University*, Turkey.
Research on remote sensing and super resolution. Teaching in Department of Electrical and Electronic Engineering

2009–2013 **Asst./Assoc. Prof.**, *Cyprus International University*, Lefkoşa, Northern Cyprus.
Research on biometric recognition, image processing, and super resolution. Teaching in Department of Information System Engineering

Research profile

- h-index: 39 Google Scholar
- i10-index: 109 Google Scholar
- number of citation: 7285 Google Scholar
- ORCID number: 0000-0001-8460-5717
- Click to go to my Google Scholar

Hobby

- Football: An amateur football player (Defence Player)
- Computer games: Championship Manager and FIFA
- Standup comedy: ex-member of Comedy Estonia

Education

Sep 2008–Jan 2011 **PhD**, *Eastern Mediterranean University*, Famagusta, N. Cyprus, TURKEY.
PhD in Electrical and Electronic Engineering, Major in Computer science.

Feb 2007 – June 2008 **M.Sc.**, *Eastern Mediterranean University*, Famagusta, N. Cyprus, TURKEY, *4.00/4.00*.
M.Sc. in Electrical and Electronic Engineering, Major in Computer science.

Sep 2003–Jan 2007 **B.Sc.**, *Eastern Mediterranean University*, Famagusta, N. Cyprus, TURKEY, *3.97/4.00*.
B.Sc. in Electrical and Electronic Engineering, Major in Robotics

Research Interests and Expertise

- Artificial Intelligence/Generative AI
- Applied machine learning
- Computer vision
- Affective computing
- Data science
- Deep learning
- DeepTech
- Human normal/abnormal behaviour analysis
- Biomedical image analysis
- Human-robot interaction
- Multimodal emotion recognition

- Block/unblock expression analysis
- Biometric recognition and verification
- Activity monitoring
- Video processing
- 3D modelling and visualisation
- DeepFake, Forensic, and Security
- Virtual and Augmented Reality

Languages

Persian	**Native**
English	**Fluent**
Turkish Cypriot	**Fluent**
Estonian	**Basic**
Hebrew	**Basic**

Professional Scientific Duties

- The Israeli Association for Ethics in Artificial Intelligence (IAEAI) - Scientific Council since 2023
- Associate Editor of Journal of Signal, Image and Video Processing since 2016
- Associate Editor of Journal of Information since 2018
- Associate Editor of Journal of Alzheimer Disease to be started in January 2019
- Deputy Scientific Coordinator of The European Network on Integrating Vision and Language (iV&L Net) ICT COST Action IC1307 December 2016 - March 2018
- Guest Lecture at Estonian Business School - 2018 and 2019
- Lead Guest Editor Special Issues on Human Abnormal Behavioural Analysis in Machine Vision and Applications Journal, EURASIP Journal on Image and Video Processing and Journal of Entropy.
- Organiser of Joint Challenge on Compound Emotion Recognition and Multimodal (Audio, Facial and Gesture) based Emotion Recognition in FG2020
- Organiser of Workshop and Challenge on Multimodal Emotion recognition in ECML2019
- Organiser of Joint Workshop and Challenge on Dominant and Complementary Emotion Recognition Using Micro Emotion Features and Head-Pose Estimation in FG2017
- Organiser of Workshop on Deep Vision in CVPR2017
- Organiser of Joint Workshop and Challenge on Action, Gesture, and Emotion Recognition Workshop and Competitions: Large Scale Multimodal Gesture Recognition and Real versus Fake expressed emotions in ICCV2017
- Local organiser of IEEE SIU2013 and IEEE SampTA2017
- MC Member of Multi-Modal Imaging of Forensic Science Evidence - tools for Forensic Science COST Action CA16101

- IEEE Senior Member since February 2016
- Chair of SP/CAS/SSC joint chapter of IEEE Estonia since January 2018
- Consular of IEEE Student Branch of University of Tartu since November 2015
- TCP of EUSIPCO 2009-2011, SIU 2013, 2015 and 2016, TCP of International Conference on Graphic and Image Processing (ICGIP) since 2015.

Awards

- IEEE Senior Membership by IEEE Organisation
- Best Lecturer of Faculty of Science and Technology, 2020 and 2018
- Best Paper: My research paper entitled "Image Super Resolution Based on Interpolation of Wavelet Domain High Frequency Subbands and the Spatial Domain Input Image" has been awarded as the best paper of 2012 by ETRI Journal.
- Innovation Competition: Second place in "Genç Girişimcileri Destekleme Proje Yarişması" in October 2008.
- Innovation Competition: I got third place in "Genç Girişimcileri Destekleme Proje Yarişması" in October 2007.
- Research Scholarship: I have been employed as a full time research assistant at department of Electrical and Electronic Engineering in EMU since February 2007.
- Research Scholarship: I have won scholarship from TRNC Ministry of Education while studying for my BSc at EMU.
- High Honor: For six consecutive semesters I have been a high honour student while studying for my BSc at EMU.

Selected Publications

For detailed list please check my Google Scholar.

Publications

A. H. Sham, P. Tikka, D. Lamas, and G. Anbarjafari, "Synthesizing facial expressions in dyadic human–robot interaction," *Signal, Image and Video Processing*, pp. 1–10, 2024.

R. E. Haamer, N. Mikhailava, V. Podliesnova, R. Saremat, T. Lusmägi, A. Petrinec, and G. Anbarjafari, "Motion sickness in mixed-reality situational awareness system," *Applied Sciences*, vol. 14, no. 6, p. 2231, 2024.

P. K. Vinodkumar, D. Karabulut, E. Avots, C. Ozcinar, and G. Anbarjafari, "Deep learning for 3d reconstruction, augmentation, and registration: A review paper," *Entropy*, vol. 26, no. 3, p. 235, 2024.

E. Avots, A. A. Jafari, C. Ozcinar, G. Anbarjafari, and A. D. N. Initiative, "Comparative efficacy of histogram-based local descriptors and cnns in the mri-based multidimensional feature space for the differential diagnosis of alzheimer's disease: a computational neuroimaging approach," *Signal, Image and Video Processing*, pp. 1–13, 2024.

L. Juuse, K. Kreegipuu, N. Põldver, A. Kask, T. Mogom, G. Anbarjafari, and J. Allik, "Processing emotions from faces and words measured by event-related brain potentials," *Cognition and Emotion*, vol. 37, no. 5, pp. 959–972, 2023.

D. Kamińska, G. Zwoliński, A. Laska-Leśniewicz, R. Raposo, M. Vairinhos, E. Pereira, F. Urem, M. Ljubić Hinić, R. E. Haamer, and G. Anbarjafari, "Augmented reality: Current and new trends in education," *Electronics*, vol. 12, no. 16, p. 3531, 2023.

K. Aktas, V. Ignjatovic, D. Ilic, M. Marjanovic, and G. Anbarjafari, "Deep convolutional neural networks for detection of abnormalities in chest x-rays trained on the very large dataset," *Signal, Image and Video Processing*, vol. 17, no. 4, pp. 1035–1041, 2023.

G. Zwoliński, D. Kamińska, R. E. Haamer, L. F. Coelho, and G. Anbarjafari, "Enhancing empathy through virtual reality: developing a universal design training application for students," *Medycyna Pracy*, vol. 74, no. 3, 2023.

P. K. Vinodkumar, D. Karabulut, E. Avots, C. Ozcinar, and G. Anbarjafari, "A survey on deep learning based segmentation, detection and classification for 3d point clouds," *Entropy*, vol. 25, no. 4, p. 635, 2023.

I. Ofodile, A. Adebomehin, P. Jemitola, A. Slavinskis, and G. Anbarjafari, "Nanosatellite attitude stabilization based on decentralized anti-windup fault tolerant control," in *2023 IEEE Aerospace Conference*, pp. 1–7, IEEE, 2023.

A. H. Sham, P. Tikka, D. Lamas, and G. Anbarjafari, "Automatic reaction emotion estimation in a human–human dyadic setting using deep neural networks," *Signal, Image and Video Processing*, vol. 17, no. 2, pp. 527–534, 2023.

A. H. Sham, K. Aktas, D. Rizhinashvili, D. Kuklianov, F. Alisinanoglu, I. Ofodile, C. Ozcinar, and G. Anbarjafari, "Ethical ai in facial expression analysis: Racial bias," *Signal, Image and Video Processing*, vol. 17, no. 2, pp. 399–406, 2023.

A. H. Sham, A. Khan, D. Lamas, P. Tikka, and G. Anbarjafari, "Towards context-aware facial emotion reaction database for dyadic interaction settings," *Sensors*, vol. 23, no. 1, p. 458, 2023.

D. Karabulut, C. Ozcinar, and G. Anbarjafari, "Automatic content moderation on social media," *Multimedia Tools and Applications*, vol. 82, no. 3, pp. 4439–4463, 2023.

A. Vecvanags, K. Aktas, I. Pavlovs, E. Avots, J. Filipovs, A. Brauns, G. Done, D. Jakovels, and G. Anbarjafari, "Ungulate detection and species classification from camera trap images using retinanet and faster r-cnn," *Entropy*, vol. 24, no. 3, p. 353, 2022.

D. Kamińska, G. Zwoliński, H. Maloku, M. Ibrani, J. Guna, M. Pogačnik, R. E. Haamer, G. Anbarjafari, L. Abazi-Bexheti, K. Bozhiqi, *et al.*, "The trends and challenges of virtual technology usage in western balkan educational institutions," *Information*, vol. 13, no. 11, p. 525, 2022.

E. Avots, A. Vecvanags, J. Filipovs, A. Brauns, G. Skudrins, G. Done, J. Ozolins, G. Anbarjafari, and D. Jakovels, "Towards automated detection and localization of red deer cervus elaphus using passive acoustic sensors during the rut," *Remote Sensing*, vol. 14, no. 10, p. 2464, 2022.

D. Rizhinashvili, A. H. Sham, and G. Anbarjafari, "Gender neutralisation for unbiased speech synthesising," *Electronics*, vol. 11, no. 10, p. 1594, 2022.

E. Avots, K. Jermakovs, M. Bachmann, L. Päeske, C. Ozcinar, and G. Anbarjafari, "Ensemble approach for detection of depression using eeg features," *Entropy*, vol. 24, no. 2, p. 211, 2022.

K. Aktas, V. Ignjatovic, D. Ilic, M. Marjanovic, and G. Anbarjafari, "Deep convolutional neural networks for detection of abnormalities in chest x-rays trained on the very large dataset," *Signal, Image and Video Processing*, pp. 1–7, 2022.

A. H. Sham, P. Tikka, D. Lamas, and G. Anbarjafari, "Automatic reaction emotion estimation in a human–human dyadic setting using deep neural networks," *Signal, Image and Video Processing*, pp. 1–8, 2022.

V. Mikhailova and G. Anbarjafari, "Comparative analysis of classification algorithms on the breast cancer recurrence using machine learning," *Medical & Biological Engineering & Computing*, vol. 60, no. 9, pp. 2589–2600, 2022.

K. Aktas, M. Kiisk, A. Giammanco, G. Anbarjafari, and M. Mägi, "A comparison of neural networks and center of gravity in muon hit position estimation," *Entropy*, vol. 24, no. 11, p. 1659, 2022.

I. Ofodile, H. Teras, A. Slavinskis, and G. Anbarjafari, "Towards an integrated fault tolerant control for estcube-2 attitude control system," in *2022 IEEE Aerospace Conference (AERO)*, pp. 1–11, IEEE, 2022.

M. Maher, P. M. Ngoy, A. Rebriks, C. Ozcinar, J. Cuevas, R. Sanagavarapu, and G. Anbarjafari, "Comprehensive empirical evaluation of deep learning approaches for session-based recommendation in e-commerce," *Entropy*, vol. 24, no. 11, p. 1575, 2022.

A. H. Sham, K. Aktas, D. Rizhinashvili, D. Kuklianov, F. Alisinanoglu, I. Ofodile, C. Ozcinar, and G. Anbarjafari, "Ethical ai in facial expression analysis: Racial bias," *Signal, Image and Video Processing*, pp. 1–8, 2022.

L. P. Coelho, I. Freitas, D. U. Kaminska, R. Queirós, A. Laska-Lesniewicz, G. Zwolinski, R. Raposo, M. Vairinhos, E. T. Pereira, E. Haamer, and G. Anbarjafari, "Virtual and augmented reality awareness tools for universal design: Towards active preventive healthcare," in *Emerging Advancements for Virtual and Augmented Reality in Healthcare*, pp. 11–24, IGI Global, 2022.

D. Kamińska, G. Zwoliński, S. Wiak, L. Petkovska, G. Cvetkovski, P. D. Barba, M. E. Mognaschi, R. E. Haamer, and G. Anbarjafari, "Virtual reality-based training: Case study in mechatronics," *Technology, Knowledge and Learning*, vol. 26, no. 4, pp. 1043–1059, 2021.

H. Elshatoury, F. Cruciani, F. Zumerle, S. F. Storti, A. Altmann, M. Lorenzi, G. Anbarjafari, G. Menegaz, and I. B. Galazzo, "Disentangling the association between genetics and functional connectivity in mild cognitive impairment," in *2021 IEEE EMBS International Conference on Biomedical and Health Informatics (BHI)*, pp. 1–4, IEEE, 2021.

I. Ofodile, N. Ofodile-Keku, P. Jemitola, G. Anbarjafari, and A. Slavinskis, "Integrated anti-windup fault-tolerant control architecture for optimized satellite attitude stabilization," *IEEE Journal on Miniaturization for Air and Space Systems*, vol. 2, no. 4, pp. 189–198, 2021.

G. Anbarjafari and K. Aktas, "System and method for managing audio-visual data," 2021. US Patent US-2020-0402511-A 1.

M. Alesmaa, R.-e. Laarmann, G. Anbarjafari, and C. Ozcinar, "Automatic 3d image reconstruction process from real-world 2d images," June 3 2021. US Patent App. 16/991,069.

A. Georgadze, M. Kiisk, M. Mart, E. Avots, and G. Anbarjafari, "Method and apparatus for detection and/or identification of materials and of articles using charged particles," 2021. US Patent App. 16/977,293.

H. Kiveste, R. Kiefer, R. E. Haamer, G. Anbarjafari, and T. Tamm, "A kirigami approach of patterning membrane actuators," *Polymers*, vol. 13, no. 1, p. 125, 2021.

M. Tammvee and G. Anbarjafari, "Human activity recognition-based path planning for autonomous vehicles," *Signal, Image and Video Processing*, vol. 15, no. 4, pp. 809–816, 2021.

P. K. Vinodkumar, C. Ozcinar, and G. Anbarjafari, "Prediction of sgrna off-target activity in crispr/cas9 gene editing using graph convolution network," *Entropy*, vol. 23, no. 5, p. 608, 2021.

K. Aktas, M. Demirel, M. Moor, J. Olesk, C. Ozcinar, and G. Anbarjafari, "Spatiotemporal based table tennis stroke-type assessment," *Signal, Image and Video Processing*, pp. 1–8, 2021.

D. Kamińska, K. Aktas, D. Rizhinashvili, D. Kuklyanov, A. H. Sham, S. Escalera, K. Nasrollahi, T. B. Moeslund, and G. Anbarjafari, "Two-stage recognition and beyond for compound facial emotion recognition," *Electronics*, vol. 10, no. 22, p. 2847, 2021.

G. Garg, V. Kuts, and G. Anbarjafari, "Digital twin for fanuc robots: Industrial robot programming and simulation using virtual reality," *Sustainability*, vol. 13, no. 18, p. 10336, 2021.

A. Domnich and G. Anbarjafari, "Responsible ai: Gender bias assessment in emotion recognition," *arXiv preprint arXiv:2103.11436*, 2021.

D. Kamińska, K. SmółŁka, G. Zwoliński, S. Wiak, D. Merecz-Kot, and G. Anbarjafari, "Stress reduction using bilateral stimulation in virtual reality," *IEEE Access*, pp. 1–17, 2020.

D. Karabulut, P. Tertychnyi, H. S. Arslan, C. Ozcinar, K. Nasrollahi, J. Valls, J. Vilaseca, T. B. Moeslund, and G. Anbarjafari, "Cycle-consistent generative adversarial neural networks based low quality fingerprint enhancement," *Multimedia Tools and Applications*, pp. 1–21, 2020.

J. Wan, C. Lin, L. Wen, Y. Li, Q. Miao, S. Escalera, G. Anbarjafari, I. Guyon, G. Guo, and S. Z. Li, "Chalearn looking at people: Isogd and congd large-scale rgb-d gesture recognition," *IEEE Transactions on Cybernetics*, 2020.

D. Kamińska, G. Zwoliński, S. Wiak, L. Petkovska, G. Cvetkovski, P. Di Barba, M. E. Mognaschi, R. E. Haamer, and G. Anbarjafari, "Virtual reality-based training: Case study in mechatronics," *Technology, Knowledge and Learning*, pp. 1–17, 2020.

T. B. Moeslund, S. Escalera, G. Anbarjafari, K. Nasrollahi, and J. Wan, "Statistical machine learning for human behaviour analysis," 2020.

N. Q. Khuyen, R. Kiefer, F. Elhi, G. Anbarjafari, J. G. Martinez, and T. Tamm, "A biomimetic approach to increasing soft actuator performance by friction reduction," *Polymers*, vol. 12, no. 5, p. 1120, 2020.

H. S. Arslan, K. Sirts, M. Fishel, and G. Anbarjafari, "Multimodal sequential fashion attribute prediction," *Information*, vol. 10, no. 10, p. 308, 2019.

D. Kamińska, T. Sapiński, S. Wiak, T. Tikk, R. E. Haamer, E. Avots, A. Helmi, C. Ozcinar, and G. Anbarjafari, "Virtual reality and its applications in education: Survey," *Information*, vol. 10, no. 10, p. 318, 2019.

A. Litvin, K. Nasrollahi, C. Ozcinar, S. E. Guerrero, T. B. Moeslund, and G. Anbarjafari, "A novel deep network architecture for reconstructing rgb facial images from thermal for face recognition," *Multimedia Tools and Applications*, pp. 1–18, 2019.

S. Jahromi, N. Mohammad, P. Buch-Cardona, E. Avots, K. Nasrollahi, S. Escalera, T. B. Moeslund, and G. Anbarjafari, "Privacy-constrained biometric system for non-cooperative users," *Entropy*, vol. 21, no. 11, p. 1033, 2019.

E. Avots, M. Madadi, S. Escalera, J. Gonzàlez, X. Baro, P. Pällin, and G. Anbarjafari, "From 2d to 3d geodesic-based garment matching," *Multimedia Tools and Applications*, vol. 78, no. 18, pp. 25829–25853, 2019.

T. Sapiński, D. Kamińska, A. Pelikant, and G. Anbarjafari, "Emotion recognition from skeletal movements," *Entropy*, vol. 21, no. 7, p. 646, 2019.

I. Ofodile, A. Helmi, A. Clapés, E. Avots, K. M. Peensoo, S.-M. Valdma, A. Valdmann, H. Valtna-Lukner, S. Omelkov, S. Escalera, and G. Anbarjafari, "Action recognition using single-pixel time-of-flight detection," *Entropy*, vol. 21, no. 4, p. 414, 2019.

C. Ozcinar, E. Ekmekcioglu, G. Anbarjafari, and A. Kondoz, "Adaptive multi-view video streaming using side information over peer-to-peer networks," *Multimedia Tools and Applications*, vol. 78, no. 6, p. 7225–7242, 2019.

J. Hook, F. Noroozi, O. Toygar, and G. Anbarjafari, "Automatic speech based emotion recognition using paralinguistics features," *Bulletin of the Polish Academy of Sciences: Technical Sciences*, 2019.

H. Elshatoury, E. Avots, G. Anbarjafari, A. D. N. Initiative, *et al.*, "Volumetric histogram-based alzheimer's disease detection using support vector machine," *Journal of Alzheimer's Disease*, no. Preprint, pp. 1–10, 2019.

K. Kulkarni, C. Corneanu, I. Ofodile, S. Escalera, X. Baro, S. Hyniewska, J. Allik, and G. Anbarjafari, "Automatic recognition of facial displays of unfelt emotions," *IEEE Transactions on Affective Computing*, 2018.

F. Noroozi, D. Kaminska, C. Corneanu, T. Sapinski, S. Escalera, and G. Anbarjafari, "Survey on emotional body gesture recognition," *IEEE Transactions on Affective Computing*, 2018.

J. Guo, Z. Lei, J. Wan, E. Avots, N. Hajarolasvadi, B. Knyazev, A. Kuharenko, J. C. S. J. Junior, X. Baró, H. Demirel, S. Escalera, J. Allik, and G. Anbarjafari, "Dominant and complementary emotion recognition from still images of faces," *IEEE Access*, vol. 6, pp. 26391–26403, 2018.

R. E. Haamer, K. Kulkarni, N. Imanpour, M. A. Haque, E. Avots, M. Breisch, K. Nasrollahi, S. Escalera, C. Ozcinar, X. Baro, and A. R. Naghsh-Nilchi, "Changes in facial expression as biometric: A database and benchmarks of identification," in *2018 13th IEEE International Conference on Automatic Face & Gesture Recognition (FG 2018)*, pp. 621–628, IEEE, 2018.

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M. N. S. Jahromi, M. B. Bonderup, K. Nasrollahi, M. Asadi-Aghbolaghi, E. Avots, S. E. Guerrero, S. Kasaei, T. B. Moeslund, and G. Anbarjafari, "Automatic access control based on face and hand biometrics in a non-cooperative context," in *Ieee Winter Conf. on Applications of Computer Vision*, IEEE, 2018.

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