CIGDEM BEYAN

Date of Birth: 01/04/1987

Place of Birth: Ankara, Turkey

Nationality: Turkish

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EDUCATION

2015 PhD. University of Edinburgh, UK
School of Informatics
Institute of Perception, Action and Behaviour (IPAB)
Thesis Title: Detection of Unusual Fish Trajectories from Underwater Videos
Supervisor: Robert Fisher
Co-Supervisor: Vittorio Ferrari

2010 MSc. Middle East Technical University (METU), TURKEY
Graduate School of Informatics
Department of Information Systems
GPA: 3.88/4.00
Thesis Title: Object Tracking for Surveillance Applications Using Thermal and Visible Band Video Data Fusion
Supervisor: Alptekin Temizel

2008 BEng. Baskent University, TURKEY
Faculty of Engineering
Department of Computer Engineering
GPA: 3.64/4.00 High Honour (Ranked second among the graduates of that year)
Thesis Title: Cancer Diagnosis with Gene Expression Data
Supervisor: Hasan Ogul

CURRENT POSITION

Since September 2015 Postdoctoral Researcher
Department of Pattern Analysis & Computer Vision
Istituto Italiano di Tecnologia (IIT), Genoa, Italy

PREVIOUS POSITIONS

May 2015- July 2015	Course Assistant for Preparing Practical Assignments Introduction to Vision and Robotics Course University of Edinburgh School of Informatics Edinburgh, UK http://www.inf.ed.ac.uk/teaching/courses/ivr/
September 2011- May 2015	Guest Lecturer, Teaching Assistant, Tutor, Marker and Demonstrator University of Edinburgh School of Informatics Edinburgh, UK
September 2008- 2011	Research/Teaching Assistant, Baskent University Department of Computer Engineering Ankara, Turkey
June 2007	Intern Meteksan System Corporate Resolution and Software Development Ankara, Turkey
June 2006	Intern Siemens Turkey Ankara, Turkey

RESEARCH PROJECTS

Since September 2018	Social Scene Understanding: Multi-Person Action Localization and Social Group Behavior Analysis
Since September 2016	Deception Detection using Multi-modal (Deep/ Hand-crafted) Nonverbal Features http://pavis.iit.it/projects/deception-detection
Since September 2015	Multi-modal Identification of Leaders in Small Group Social Interactions https://www.iit.it/datasets/leadership-corpus-dataset

September 2011-May 2015	Fish4Knowledge Project (the European Union Seventh Framework Programme [FP7/2007-2013] under grant agreement 257024, 2011-2013) Behaviour analysis of fish in live undersea video recordings (A part of PhD. Thesis) http://groups.inf.ed.ac.uk/f4k/
September 2009-December 2010	• Object Tracking for Surveillance Applications using Thermal and Visible Band Video Data Fusion (Msc. Thesis) • Fusion of Thermal and Visible Band Video for Abandoned Object Detection METU Computer Vision and Remote Sensing Research Group http://ii.metu.edu.tr/virtual-reality-and-computer-vision-research-group
September 2009-2011	Probabilistic Modelling of miRNA mRNA Duplexes Baskent University Bioinformatics and Bio-inference Research Group http://www.baskent.edu.tr/~hogul/research.htm
September 2008-June 2008	Cancer Diagnosis with Gene Expression Data (BEng. Thesis)

AWARDS

• Became **Associate Fellow of the Higher Education Academy** in recognition of attainment against the UK Professional Standards Framework for teaching and learning support in higher education (18/11/2014). http://www.heacademy.ac.uk/

• **Edinburgh Global Overseas Research Scholarship** (2011-2014)
http://www.ed.ac.uk/schools-departments/student-funding/postgraduate/international/global/research

• **Principal Career Development Scholarship, University of Edinburgh** (2011-2014) http://www.ed.ac.uk/schools-departments/student-funding/postgraduate/uk-eu/university-scholarships/development

• **Best Thesis Award**
Given by Prof. Dr. Mustafa N. Parlar Education and Research Foundation, Middle East Technical University, Ankara, Turkey, Thesis of the year award, 2011.

• **2010-2011 Academic year Best Thesis Award**

Given by Middle East Technical University to Postgraduate Thesis including all institutes, http://ii.metu.edu.tr/awarded-theses

- **Alper Atalay Best Student Paper Award, first place**
19th IEEE Conference on Signal Processing and Communications Applications, April 2011, http://vpa.sabanciuniv.edu/links/bupam/alper/odul.htm

- **SPIE Student Travel Grant**, SPIE Defense, Security, and Sensing Symposium, April 2011.

- **2007-2008 Academic Year Baskent University Academic Achievement Scholarship,** High Honour (GPA: 3.72/4.00)

- **2006-2007 Academic Year Baskent University Academic Achievement Scholarship,** High Honour (GPA: 3.73/4.00)

SCIENTIFIC ACTIVITIES

Journal Reviewer
- Pattern Recognition
- IEEE Transactions on Pattern Analysis and Machine Intelligence
- IEEE Transactions on Knowledge and Data Engineering
- IEEE Transactions on Multimedia
- IEEE Transactions on Affective Computing
- IEEE Multimedia
- IET Computer Vision
- IET Image Processing
- Expert Systems with Applications
- EURASIP Journal on Image and Video Processing
- ICES Journal of Marine Science
- Frontiers Psychology
- Electronics Letters

International Conference Reviewer
- Conference on Computer Vision and Pattern Recognition (CVPR) 2017, 2018, 2019
- Conference on Neural Information Processing Systems (NIPS) 2016, 2017
- British Machine Vision Conference (BMVC) 2017
- International Conference on Pattern Recognition (ICPR) 2014, 2016, 2018
- International Conference on Motion and Computing (MOCO) 2018
- Multimodal Learning and Applications Workshop (MULA) 2018
- ICCV Workshop on Action Recognition with a Large Number of Classes (THUMOS) 2013

National (Turkish) Conference Reviewer
- IEEE Sinyal İşleme ve İletişim Uygulamaları (SIU) 2018

Guest Editor
- Frontiers in Robotics and AI:
Computational Approaches for Human-Human and Human-Robot Social Interactions
https://www.frontiersin.org/research-topics/8447/computational-approaches-for-human-human-and-human-robot-social-interactions

Editor
- ICES Journal of Marine Science (18 September 2018-Ongoing):
Covering area of applications of computer vision and machine learning in marine science.
https://academic.oup.com/icesjms/pages/Editorial_Board

Invited Talks
- Social Signal Processing Approaches for Emergent Leadership
In Department of Multimedia Informatics, Graduate School of Informatics, Middle East Technical University, Ankara, Turkey, December 27, 2017.
https://ii.metu.edu.tr/announcement/social-signal-processing-approaches-dr-cigdem-beyan

RESEARCH INTEREST

- Nonverbal Analysis of Multimodal Interactions/ Social Signal Processing: E.g. Leadership, Personality Trait Analysis, Deception.
- Computer Vision: E.g. Trajectory Analysis, Anomaly Detection, Object Tracking, Object Detection, Behaviour Understanding
- Machine Learning: E.g. Deep Learning, Classification for Imbalanced Data, Active Learning, Clustering in High Dimensional Space

PUBLICATIONS

Google Scholar Citations
http://scholar.google.com/citations?user=VmjUxckAAAAJ&hl=tr

International Patents

[IP01]	A.Temizel, **C.Beyan**, "A Method for Individual Tracking of Multiple Objects", PCT Patent Application to WIPO, WO/2012/141663, PCT/TR2011/000082, 13 April 2011.

Book Chapters

[B03]	**C. Beyan**, "Unusual Trajectory Detection: Advances", In Encyclopedia of Image Processing, 1st Edition, Phillip A. Laplante (Editor), Taylor & Francis Group: New York, pp: 766-781, doi: 10.1201/9781351110273-140000116.
[B02]	**C. Beyan**, "Fish Behavior Analysis", In Fish4Knowledge: Collecting and Analyzing Massive Coral Reef Fish Video Data, Chen-Burger et al. (Editors), Springer, doi: 10.1007/978-3-319-30208-9.
[B01]	**C. Beyan**, and R. B. Fisher, "Hierarchal Decomposition for Unusual Fish Trajectory Detection", In Computer Vision and Pattern Recognition in Environmental Informatics, Zhou et al. (Editors), IGI Global, doi: 10.4018/978-1-4666-9435-4.ch001.

Refereed International Journals Papers

[IJ11]	**C. Beyan**, V. M. Katsageorgiou, V. Murino, "A Sequential Data Analysis Approach to Detect Emergent Leaders in Small Groups", IEEE Transactions on Multimedia, 2019. In Press. doi:
[IJ10]	**C. Beyan**, V. M. Katsageorgiou, R. Fisher, "Extracting Statistically Significant Behaviour from Fish Tracking Data With and Without Large Dataset Cleaning", IET Computer Vision, vol. 12, no. 2. pp. 162-170, 2018. doi: 10.1049/iet-cvi.2016.0462.

[IJ09]	**C. Beyan**, F. Capozzi, C. Becchio, and V. Murino, "Prediction of the Leadership Style of an Emergent Leader Using Audio and Visual Nonverbal Features", IEEE Transactions on Multimedia, vol. 20, no. 2, pp. 441-456, 2018. doi: 10.1109/TMM.2017.2740062.
[IJ08]	**C. Beyan**, B. Boom, J. Liefhebber, K-T Shao, and R. Fisher, "Natural Swimming Speed of Dascyllus reticulatus Increases with Water Temperature", ICES Journal of Marine Science, vol. 72, no. 8, pp. 2506-2511, 2015. doi: 10.1093/icesjms/fsv104.
[IJ07]	**C. Beyan**, R. Fisher, "Classifying Imbalanced Data Sets Using Similarity Based Hierarchical Decomposition", Pattern Recognition, vol. 48, no. 5, pp. 1653–1672, 2015. doi: 10.1016/j.patcog.2014.10.032.
[IJ06]	**C. Beyan**, A. Temizel, "A Multimodal Approach for Individual Tracking of People and Their Belongings", Imaging Science Journal, vol. 63, no. 4, pp. 192-202, 2015. doi: 10.1179/1743131X14Y.0000000101.
[IJ05]	S. McDonagh, **C. Beyan**, P. X. Huang and R. B. Fisher, "Applying semi-synchronised task farming to large-scale computer vision problems", International Journal of High Performance Computing Applications, vol. 29. no. 4, pp. 1-24, 2015. doi: 10.1177/1094342014532965.
[IJ04]	B. J. Boom, J. He, S. Palazzo, P. X. Huang, **C. Beyan**, H. Chou, F. Lin, C. Spampinato, R. B. Fisher, "A research tool for long-term and continuous analysis of fish assemblage in coral-reefs using underwater camera footage", Ecological Informatics, vol. 23, pp. 83-97, 2014. doi: 10.1016/j.ecoinf.2013.10.006.
[IJ03]	C. Spampinato, E. Beauxis-Aussalet, S. Palazzo, **C. Beyan**, J. van Ossenbruggen, J. He, B. Boom, X. Huang, "A rule-based event detection system for real-life underwater domain", Machine Vision and Applications, vol. 25, no. 1, pp. 99-117, January 2014. doi: 10.1007/s00138-013-0509-x.
[IJ02]	**C. Beyan**, A.Temizel, "Adaptive Mean-Shift for Automated Multi Object Tracking", IET Computer Vision, vol. 6 no.1 pp. 1-12, 2012. doi: 10.1049/iet-cvi.2011.0054.
[IJ01]	**C. Beyan**, A.Yigit, A.Temizel, "Fusion of Thermal and Visible Band Video for Abandoned Object Detection", SPIE Journal of Electronic Imaging, vol. 20, no. 3, 033001, 2011.

Refereed International Conference/Workshop Papers

[IC15]	N. Carissimi, P. Rota, **C. Beyan**, V. Murino, "Filling the Gaps: Predicting Missing Joints of Human Poses Using Denoising Autoencoders", In Proceedings of the 9th HBUGEN Workshop, European Conference on Computer Vision (ECCV), 2018. doi: 10.1007/978-3-030-11021-5.
[IC14]	**C. Beyan**, M. Shahid and V. Murino, "Investigation of Small Group Social Interactions Using Deep Visual Activity-Based Nonverbal Features", In Proceedings of 26th ACM Multimedia (ACMMM), pp. 311-319, 2018. doi: 10.1145/3240508.3240685. *(~27.5% overall acceptance rate)*
[IC13]	N. Carissimi, **C. Beyan**, and V. Murino, "A Multi-View Learning Approach to Deception Detection", In Proceedings of 13th IEEE International Conference on Automatic Face and Gesture Recognition (IEEE FG), pp. 599-606, 2018. doi: 10.1109/FG.2018.00095. *(~47% overall acceptance rate)*
[IC12]	**C. Beyan**, F. Capozzi, C. Becchio, and V. Murino, "Multi-task Learning of Social Psychology Assessments and Nonverbal Features for Automatic Leadership Identification", In Proceedings of ACM International Conference on Multimodal Interaction (ACM ICMI), pp. 451-455, 2017. doi: 10.1145/3136755.3136812. *(~43% overall acceptance rate)*
[IC11]	**C. Beyan**, V. M. Katsageorgiou, and V. Murino, "Moving as a Leader: Detecting Emergent Leadership in Small Groups using Body Pose", In Proceedings of 25th ACM Multimedia (ACMMM), pp. 1425-1433, 2017. doi: 10.1145/3123266.3123404. *(~28% overall acceptance rate)*
[IC10]	**C. Beyan**, F. Capozzi, C. Becchio, and V. Murino, "Identification of Emergent Leaders in a Meeting Scenario Using Multiple Kernel Learning", In Proceedings of International Workshop on Advancements in Social Signal Processing for Multimodal Interaction (ASSP4MI), in conjunction with ACM International Conference on Multimodal Interaction (ACM ICMI), pp. 3-10, 2016. doi: 10.1145/3005467.3005469.

[IC09]	**C. Beyan**, N. Carissimi, F. Capozzi, S. Vascon, M. Bustreo, A. Pierro, C. Becchio, and V. Murino, "Detecting emergent leader in a meeting environment using nonverbal visual features only", In Proceedings of ACM International Conference on Multimodal Interaction (ACM ICMI), pp. 317-324, 2016. doi: 10.1145/2993148.2993175. *(~38% overall acceptance rate)*
[IC08]	**C. Beyan**, R. B. Fisher, "Detection of Abnormal Fish Trajectories Using a Clustering Based Hierarchical Classifier", In Proceedings of British Machine Vision Conference (BMVC), pp. 1-11, 2013. doi: 10.5244/C.27.21. *(~30% overall acceptance rate)*
[IC07]	**C. Beyan**, R. B. Fisher, "Detecting abnormal fish trajectories using clustered and labeled data", In Proceedings of 20th IEEE International Conference on Image Processing (IEEE ICIP), pp. 1476-1480, 2013. doi: 10.1109/ICIP.2013.6738303. *(~44.5% overall acceptance rate)*
[IC06]	**C. Beyan**, R. B. Fisher, "A Filtering Mechanism for Normal Fish Trajectories", In Proceedings of the 21st International Conference on Pattern Recognition (ICPR), pp. 2286-2289, 2012. *(~48.5% overall acceptance rate)*
[IC05]	B. J. Boom, P. X. Huang, **C. Beyan**, C. Spampinato, S. Palazzo, J. He, E. Beauxis-Aussalet, S.-I. Lin, H.-M. Chou, G. Nadarajan, Y.-H. Chen-Burger, J. van Ossenbruggen, D. Giordano, L. Hardman, F.-P. Lin, R. B. Fisher, "Long-term underwater camera surveillance for monitoring and analysis of fish populations", International Workshop on Visual Observation and Analysis of Animal and Insect Behavior (VAIB), in conjunction with the 21st International Conference on Pattern Recognition, 2012.
[IC04]	S. Palazzo, C. Spampinato, **C. Beyan**, "Event Detection in Underwater Domain by Exploiting Fish Trajectory Clustering", In Proceedings of the 1st ACM international workshop on Multimedia analysis for ecological data (MAED), in conjunction with ACM Multimedia (ACMMM), pp. 31-36, 2012. doi: 10.1145/2390832.2390840.
[IC03]	**C. Beyan**, A. Temizel, "Mean-Shift Tracking for Surveillance Applications Using Thermal Infrared and Visible Band Data Fusion", In Proceedings of SPIE Vol. 8020, 802010, Defense, Security and Sensing: Airborne Intelligence, Surveillance, Reconnaissance (ISR) Systems and Applications VIII, pp. 1-13, 2011. doi: 10.1117/12.882838.

[IC02]	H. Ogul, **C. Beyan**, O. Eren, K. Yildiz, T. Ercelebi, B. Sonmez, "MicroRNA target recognition from compositional features of aligned microRNA-mRNA duplexes", In Proceedings of International Symposium on Innovations in Intelligent Systems and Applications (INISTA), 2010.
[IC01]	**C. Beyan**, H. Ogul, "A fuzzy k-NN approach for cancer diagnosis with microarray gene expression data", In Proceedings of 3rd International Symposium on Health Informatics and Bioinformatics (HIBIT), 2008.

Refereed National Conference Papers

[NC02]	**Ç. Beyan**, A. Temizel, "Detection of Abandoned Objects Using Thermal and Visible Band Tracking", In Proceedings of 19th IEEE Conference on Signal Processing and Communications Applications (IEEE SIU), pp. 114-117, 2011. doi: 10.1109/SIU.2011.5929600. ***(Received Alper Atalay Best Student Paper Award, first place)***
[NC01]	**Ç. Beyan**, A. Temizel, "A Hybrid Multi Object Tracker Using Mean-shift and Background Subtraction", In Proceedings of 19th IEEE Conference on Signal Processing and Communications Applications (IEEE SIU), pp. 110-113, 2011. doi: 10.1109/SIU.2011.5929599.

TEACHING EXPERIENCE

Tutor/ Lab Demonstrator, Teaching Assistant and Marker at University of Edinburgh School of Informatics (September 2011- May 2015) Delivered:
• Advanced Vision (Marker, Guest Lecturer)
http://www.inf.ed.ac.uk/teaching/courses/av/
• Introductory Applied Machine Learning (Tutor)
http://www.inf.ed.ac.uk/teaching/courses/iaml/
• Database Systems (Tutor)
http://homepages.inf.ed.ac.uk/libkin/teach/dbs13/
• INF-1-DA: Informatics 1 - Data and Analysis (Tutor, Marker)
http://www.inf.ed.ac.uk/teaching/courses/inf1/da/2013-2014/
• INF-1-CP: Computer Programming: Skills and Concepts (Demonstrator, Teaching Assistant)
http://www.inf.ed.ac.uk/teaching/courses/cp/

Research/Teaching Assistant in Baskent University, Department of Computer Engineering (September 2008- September 2011) Delivered:

- BIL105 Programming Laboratory 1 (Programming with C)
- BIL106 Programming Laboratory 2 (Programming with C++)
- BIL231 Discrete Structures
- BIL240 Programming Languages
- BIL284 Assembly Languages
- BIL364 Automata Theory
- BIL352 Database Management Systems
- BIL431 Computer Networks
- BIL464 Multimedia Systems
- BIL375 Computer Organization and Architecture

SUPERVISION EXPERIENCE

- Nicolò Carissimi (PhD Thesis co-supervising, 2015-2018)
Investigating Social Interactions Using Multi-Modal Nonverbal Features

- Muhammad Shahid (PhD Thesis co-supervising, 2017-Ongoing)
Social Interactions Analysis through Deep Visual Nonverbal Features

OTHER COMPETENCES

- **Programming Languages:** MATLAB, C/C++, Python, Java, SQL, Assembly, PERL, Haskell, PHP

- **Computer Vision/ Machine Learning Related:** MatConvNet, OpenCV, Tensorflow, Weka, R

- **Operating Systems**: Windows, Linux

- **Languages:** Turkish (Native), English (Advanced), Italian (Basic)

MEMBERSHIP

- **IEEE** (2013-current)
- **ACM** (2018-current)
- **The British Machine Vision Association (BMVA)** Student Membership (2013-2014)
- **Associate Fellow of the Higher Education Academy** (18/11/2014)

SOCIAL ACTIVITIES

- **Worked voluntarily** as a Turkish teacher for children and adults in Speak Turkish Edinburgh, which is a registered charity (SC043391) dedicated to fostering a wider understanding of Turkish language and culture. This covers various level of classes such as age of 10-18 (November 2011- August 2012) and adults (September 2012- July 2014).
- **President of University of Edinburgh Turkish Society** (October 2014- April 2015).
- **Secretary of University of Edinburgh Turkish Society** (April 2014- October 2014, I actively worked on establishment of it as well; it was established in February 2014).
- Baskent University Faculty of Engineering, Department Of Computer Engineering Yearbook Preparation Community, Department Coordinator (2008).
- Baskent University Computer Society Secretary of Administrative Body (2007).

- **Personal Traits:** Team worker, leader, creative, problem solver, tidy, hardworking
- **Hobbies:** Travelling, basketball, hiking, movies

REFERENCES

- **Prof. Robert Fisher, PhD** (PhD. Thesis Supervisor)
D. Director of Graduate School, Chair of Computer Vision, School of Informatics, University of Edinburgh, UK
Address: School of Informatics, University of Edinburgh, Room: 1.26, Informatics Forum, 10 Crichton Street, Edinburgh, EH8 9AB, UK
Phone: 44-131-651-3441
Fax: 44-131-650-6899
Email: rbf@inf.ed.ac.uk
Web Address: http://homepages.inf.ed.ac.uk/rbf/

- **Prof. Vittorio Murino, PhD** (Current Principal Investigator)
Director of Pattern Analysis & Computer Vision (PAVIS), Italian Institute of Technology (IIT), Genoa, Italy.
Professor in University of Verona, Department of Computer Science, Italy.
Address: Pattern Analysis & Computer Vision Istituto Italiano di Tecnologia (IIT), Via Enrico Melen 83, Edificio B, 16152 Genova, Italy
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Email: Vittorio.Murino@iit.it
Web Address: http://profs.sci.univr.it/~swan/

- **Prof. Alptekin Temizel, PhD** (MSc. Thesis Supervisor)
Associate Professor at Middle East Technical University (METU), Graduate School of Informatics, Turkey, Principal Investigator of Virtual Reality and Computer Vision Research Group at METU.
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