Antonios Danelakis

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Education

2012 - 2016 **Ph.D. in Computer Vision**, National & Kapodistrian University of Athens (NKUA), Department of Informatics & Telecommunications, *Dissertation title* : Facial expression retrieval using 3-dimensional mesh sequence

2010 - 2012 **M.Sc. in Medical Informatics**, National & Kapodistrian University of Athens (NKUA), Department of Informatics & Telecommunications, *Thesis title* : Development of automated diagnostic software for breast MRI examination

2008 - 2010 **M.Sc. in Computational Science**, National & Kapodistrian University of Athens (NKUA), Department of Informatics & Telecommunications, *Thesis title* : Ray Casting Visualization System of Tetrahedral Meshed implemented on hardware

2003 - 2008 **Bachelor's Degree**, National & Kapodistrian University of Athens (NKUA), Department of Informatics & Telecommunications, *Thesis title* : Visualization System of Multiple Resolutions of Vector Fields on Tetrahedral Meshes

Experience

02/2023-Today

Researcher, Norwegian Center for Headache Research(NorHead), Trondheim, Norway

Responsibilities :

- Perform applied research
- Develop and implement source code
- Disseminate results
- Supervise master thesis research
- Produce scientific papers

Computer Vision | AI | Machine Learning | Deep Learning | Neurology

02/2023-Today

Researcher, Norwegian University of Science & Technology (NTNU),Department of Computer Science (IDI), Trondheim, Norway

Responsibilities :

- Perform applied research
- Develop and implement source code
- Disseminate results
- Supervise master thesis research
- Produce scientific papers

Computer Vision | AI | Machine Learning | Deep Learning | Neurology

09/2019-12/2022

Postdoctoral Fellow, Norwegian University of Science & Technology (NTNU),Department of Computer Science (IDI), Trondheim, Norway

Responsibilities :

- Perform applied research
- Develop and implement source code
- Disseminate results
- Supervise master thesis research
- Produce scientific papers
- Manage EU and national projects
- Write project proposals
- Write, review and submit project deliverables

Computer Vision | Image Processing | Biometrics | AI | Deep Learning | Geometric Deep Learning

04/2018-09/2019 | **Senior Computer Vision Engineer, National Centre for Scientific Research “Demokritos” (NCSRD), Institute of Informatics & Telecommunications, Athens, Greece**

Responsibilities :

- Supervise research
- Produce scientific papers
- Disseminate results
- Manage EU projects
- Write project proposals
- Write, review and submit project deliverables

Computer Vision | Medical Informatics | Image Processing | MatLab | Python | Deep Learning | AI

04/2017-12/2017 | **Postdoctoral Scientific Researcher, Norwegian University of Science & Technology (NTNU), Department of Computer Science (IDI), Trondheim, Norway**

Responsibilities :

- Perform primitive research
- Develop and utilize source code
- Produce scientific papers
- Write project proposals

Computer Vision | Medical Informatics | Image Processing | Multiple Sclerosis Lesion Segmentation Using Brain MRI | AI | MatLab

04/2012-01/2016 | **Researcher, National & Kapodistrian University of Athens (NKUA), Department of Informatics & Telecommunications, Athens, Greece**

Responsibilities :

- Perform primitive research
- Develop and utilize source code
- Produce scientific papers
- Write project deliverables

Computer Vision | 4D Facial Expression Recognition & Retrieval | 3D Object Retrieval | AI | MatLab | Biometrics

Projects

BioCer : A clinical study for migraine

08/2023 - 08/2026

BioCer Webpage

BioCer is a clinical study that investigates the effect of a new migraine treatment. The treatment is medication-free and uses biofeedback to prevent migraine attacks.

Responsibilities :

- Supervise project research
- Produce scientific papers
- Disseminate project results

Innovation Norway | NTNU | AI | ML | Neurology

Improving Preventive Treatment for Migraine (MIGRI-NOR)

10/2024 - 05/2026

MIGRI-NOR Webpage

MIGRI-NOR project is for the patients who are going to start or change a drug as preventive treatment for migraine. The aim is to help clarify which drugs and doses are best for the treatment of migraine in different people using machine learning.

Responsibilities :

- Supervise project research
- Produce scientific papers
- Disseminate project results

Innovation Norway | NTNU | AI | ML | Neurology

Federated Ethical Healthcare Learning Sandbox (FEHLS)

10/2024 - 09/2025

FEHLS Webpage

The FEHLS project is funded by Nordic Innovation. It will use federated learning and ethical AI to extract insights from patient journals in different languages across Nordic healthcare systems. FEHLS aims to promote Responsible AI in the medical domain.

Responsibilities :

- Project management and coordination
- Supervise project research
- Produce scientific papers
- Disseminate project results

Innovation Norway | NTNU | Ethical AI | Federated ML | Neurology

Machine Intelligence in Headaches (MI-HEAD)

02/2023 - 01/2027

MI-HEAD Webpage

MI-HEAD is a large-scale interdisciplinary research project combining clinical headache research, artificial intelligence and machine learning. The overall goal of MI-HEAD is to develop machine learning models to improve diagnostics and treatment of headache disorders. MI-HEAD is a 4.5 year research project funded by the Norwegian Research Council.

Responsibilities :

- Perform project research
- Produce scientific papers
- Disseminate project results

ERC | NTNU | AI | ML | Neurology

Detecting Document fraud and iDentity on the fly (D4FLY) 09/2019 - 08/2022

D4FLY Webpage CORDIS

The overall D4FLY concept was to identify, reduce and avoid vulnerabilities in the identity life-cycle of modern border management, thereby strengthening European Smart Borders against serious and organized crime. This was achieved by exploring, developing and validating new technologies for identity and document verification – including biometrics-on-the-fly. D4FLY was a 36 month research and innovation action (RIA) project with a consortium of 19 partners. NTNU was a key contributor (work package leader).
Responsibilities :

- Supervise project research
- Perform project research
- Produce scientific papers
- Disseminate project results
- Project management
- Write and review project deliverables

HORIZON 2020 | NTNU | RIA | Border Crossing Management | Biometrics

Continuous, Automatic, and Robust Mass Identity Verification (CARMA) 05/2022 - 08/2022

The overall aim of this project was to create a web-based application that can be used for online Continuous, Automatic, and Robust MAss identity verification (CARMA) using a personal computer's webcam. This was an internal initiative with the collaboration of the Technology Transfer Office of NTNU.
Responsibilities :

- Supervise project research
- Perform project research
- Project management and coordination
- Write and review project deliverables

NTNU | NTNU DISCOVERY | Education | Biometrics

Systemic Analyser In Network Threats (SAINT) 04/2018 - 04/2019

SAINT Webpage CORDIS

The SAINT project proposes to examine the problem of failures in cyber-security using a multidisciplinary approach that goes beyond the purely technical viewpoint. Building upon the research and outcomes from preceding projects, the aim is to combine the insights gained to progress further analysis into economic, behavioural, societal and institutional views in pursuit of new methodologies that improve the cost- effectiveness of cyber-security. SAINT was a 24 month research and innovation action project (RIA) with a consortium of 9 partners. NCSRD was the coordinator.
Responsibilities :

- Project management and coordination
- Review and submit project deliverables

HORIZON 2020 | NCSRD | RIA | Cyber-security

Optimising time-to-FLY and enhancing airport SECurity (FLY-SEC) 04/2018 - 07/2018

FLY-SEC Webpage CORDIS

FLY-SEC developed and demonstrated an innovative, integrated and end-to-end airport security process for passengers, while enabling a guided and streamlined procedure from landside to airside and into the boarding gates, and offering for the first time an operationally validated innovative concept for end-to-end aviation security. FLY-SEC was a 39 month research and innovation action project (RIA) with a consortium of 11 partners. NCSRD was the coordinator.
Responsibilities :

- Project management
- Supervise project lab research
- Produce scientific papers
- Disseminate project results

HORIZON 2020 | NCSRD | RIA | Border Crossing Management

RobusT Risk basEd Screening and alert System for PASSengers and luggage (TRESSPASS) 04/2018 - 08/2019

TRESSPASS Webpage CORDIS

The overall scope of TRESSPASS was to modernize the way the security checks at border crossing points are held out. TRESSPASS was a 42 month innovation action project (IA) with a consortium of 23 partners.

Responsibilities :

- Project management
- Supervise project lab research
- Produce scientific papers
- Disseminate project results

HORIZON 2020 | NCSRD | RIA | Border Crossing Management

THALES - DUTH - 3D Object Retrieval (3DOR) 04/2012 - 01/2016

The purpose of the project THALES - DUTH - 3D Object Retrieval was the research, design and implementation of original robust and effective methodologies for the retrieval of static and spatiotemporal three-dimensional (3D) objects. The project lasted 45 months (2012-2016). Funding source:Operational Program "Education and Lifelong Learning" of the National Strategic Reference Framework (NSRF), Greek Ministry of Education, Project ID : 379516. National & Kapodistrian University of Athens (NKUA), Department of Informatics & Telecommunications.

Responsibilities :

- Perform primitive research
- Develop and utilize source code
- Produce scientific papers
- Disseminate project results
- Write project deliverables

NSRF | NKUA | 4D facial expression recognition and retrieval

Teaching and Mentoring

09/2020-06/2025	**Master Thesis Supervisor, Norwegian University of Science & Technology (NTNU), Department of Computer Science (IDI)** › 3D facial reconstruction from front and side images. › 3D face reconstruction based on a single input image. › Mesh-based 3D face recognition using geometric deep learning. › 3D face tracking using geometric deep learning. › 3D-to-2D Facial Recognition based on Geometric Deep Learning.
09/2020-06/2025	**Specialization project supervision, Norwegian University of Science & Technology (NTNU), Department of Computer Science (IDI)** › Continuous transformer-based facial recognition. › 3D-to-2D Facial Recognition based on Geometric Deep Learning. › Facial Landmark Detection.
09/2019-11/2020	**Master Thesis Supervision, National & Kapodistrian University of Athens (NKUA), Department of Informatics & Telecommunications** › Assessing the URxD 3D face recognition algorithm on synthetic facial data.
09/2012-01/2016	**Teaching, National & Kapodistrian University of Athens (NKUA), Department of Informatics & Telecommunications** › Graphics Programming : Lab in OpenGL.

Computer Skills

Programming	Python, C/C++, Matlab, PLINK, LDpred2, R.
Databases	MySQL.
Development Tools	Spyder, MatLab, MeshLab.
Operating Systems	Windows, Linux, Android.
Project Management	Slack, EMDesc.
Online Meetings	WebEx, GoToMeeting, Zoom, GoogleMeet, Microsoft Teams.
Miscellaneous	LaTeX, Microsoft Office.

References

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MRI Medical Physicist,, Onasseio Cardio-surgery Center
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Languages

- **Greek** : Native speaker
- **English** : Proficiency level (C1)
- **German** : Intermediate level (B2)
- **Norwegian** : Intermediate level (B2)

Strengths

- Responsible
- Analytical
- Hard-working
- Communication Skills
- Proactive
- Result-oriented

Journal Publications

2025 **Danelakis, A.**, Stubberud A., Tronvik E., Matharu M., 2025. The Emerging Clinical Relevance of Artificial Intelligence, Data Science, and Wearable Devices in Headache : A Narrative Review. Life, 15(6), p. 909. https://doi.org/10.3390/life15060909

2025 **Danelakis, A.**, Kumelj T., Winsvold B., Bjørk M.H., Nachev P., Matharu M., Dominic G., International Headache Genetic Consortium, Tronvik E., Langseth H., Stubberud A., 2025. Diagnosing migraine from genome-wide genotype data : a machine learning analysis. Brain, 202 ;awaf172. https://doi.org/10.1093/brain/awaf172

2025 Faisal F., **Danelakis A.**, Bjørk M.H., Winsvold B., Matharu M., Nachev P., Hagen K., International Headache Genetics Consortium, Tronvik E., Stubberud A., 2025. Prediction of new-onset migraine using clinical-genotypic data from the HUNT Study : a machine learning analysis. Journal of Headache and Pain. 2025;26(1):70.doi:10.1186/s10194-025-02014-2

2024 **Danelakis, A.**, Langseth H, Nachev P, et al., 2021. What predicts citation counts and translational impact in headache research? A machine learning analysis. Cephalalgia. 2024;44(5). doi:10.1177/03331024241251488

2021 Saiti, E., **Danelakis, A.** and Theoharis, T., 2021. Cross-time registration of 3D point clouds. Computers & Graphics, 99, pp.139-152.

2021 Lium, O., Kwon, Y.B., **Danelakis, A.** and Theoharis, T., 2021. Robust 3D Face Reconstruction Using One/Two Facial Images. Journal of Imaging, 7(9), p.169.

2020 **Danelakis, A.** and Theoharis, T., 2020. Image-based somatotype as a biometric trait for non-collaborative person recognition at a distance and on-the-move. Sensors, 20(12), p.3419.

2019 Veinidis, C., **Danelakis, A.**, Pratikakis, I. and Theoharis, T., 2019. Effective descriptors for human action retrieval from 3D mesh sequences. International Journal of Image and Graphics, 19(03), p.1950018.

2018 **Danelakis, A.**, Theoharis, T. and Verganelakis, D.A., 2018. Survey of automated multiple sclerosis lesion segmentation techniques on magnetic resonance imaging. Computerized Medical Imaging and Graphics, 70, pp.83-100.

2018 **Danelakis, A.**, Theoharis, T. and Pratikakis, I., 2018. Action unit detection in 3D facial videos with application in facial expression retrieval and recognition. Multimedia Tools and Applications, 77(19), pp.24813-24841.

2016 **Danelakis, A.**, Theoharis, T. and Pratikakis, I., 2016. A spatio-temporal wavelet-based descriptor for dynamic 3D facial expression retrieval and recognition. The visual computer, 32(6), pp.1001-1011.

2016 **Danelakis, A.**, Theoharis, T., Pratikakis, I. and Perakis, P., 2016. An effective methodology for dynamic 3D facial expression retrieval. Pattern Recognition, 52, pp.174-185.

2016 **Danelakis, A.**, Theoharis, T. and Pratikakis, I., 2016. A robust spatio-temporal scheme for dynamic 3D facial expression retrieval. The Visual Computer, 32(2), pp.257-269.

2015 **Danelakis, A.**, Theoharis, T. and Pratikakis, I., 2015. A survey on facial expression recognition in 3D video sequences. Multimedia Tools and Applications, 74(15), pp.5577-5615.

2013 **Danelakis, A.**, Verganelakis A.D, and Theoharis, T., 2013. A new user-friendly visual environment for breast MRI data analysis. Computer methods and programs in biomedicine, 110(3), pp.411-423.

2013 **Danelakis, A.**, Mitrouli, M. and Triantafyllou, D., 2013. Blind image deconvolution using a banded matrix method. Numerical Algorithms, 64(1), pp.43-72.

2012 Christou, D., **Danelakis, A.**, Mitrouli, M. and Triantafyllou, D., 2012. A hybrid method for computing the intersection and tangency points of plane curves. Applied Mathematics and Computation, 219(4), pp.1975-1987.

Conference Publications

2024 Fahim Faisal, Antonios Danelakis, Marte-Helene Bjørk, Bendik Winsvold, Parashkev Nachev, Manjit Matharu, Knut Hagen, Int. Headache Genetic Cons. IHGC, Erling Andreas Tronvik, Anker Stubberud, 2024, December. Prediction of new-onset migraine for clinical-genotypic data : a machine learning analysis. In 2024 European Headache Congress (EHC).

2024 Antonios Danelakis, Håkon Kvisle Abildsnes, Fahim Faisal, Bendik S. Winsvold, Marte Helene Bjørk, Dominic Giles, Parashkev Nachev, Tjasa Kumelj, Knut Hagen, Manjit Matharu, Int. Headache Genetic Cons. IHGC, Erling Tronvik, Helge Langseth and Anker Stubberud, 2024, December. Machine learning can predict migraine from genotype and non-headache clinical data with high accuracy. In 2024 European Headache Congress (EHC).

2024 Antonios Danelakis, Bendik S. Winsvold, Marte Helene Bjørk, Dominic Giles, Parashkev Nachev, Tjasa Kumelj, Knut Hagen, Manjit Matharu, Dale R. Nyholt, Erling Tronvik, Helge Langseth and Anker Stubberud, 2024, September. Machine learning versus polygenic risk scoring as migraine predictors based on genome-wide genotype data. In 2024 Migraine Trust International Symposium (MTIS).

2021 Chen, L., Boyle, J., **Danelakis, A.**, Ferryman, J., Ferstl, S., Gicic, D., Grudzień, A., Howe, A., Marcin, K., Mierzejewski, K. and Theoharis, T., 2021, November. D4FLY Multimodal Biometric Database : multimodal fusion evaluation envisaging on-the-move biometric-based border control. In 2021 17th IEEE International Conference on Advanced Video and Signal Based Surveillance (AVSS) (pp. 1-8). IEEE.

2019 Bouritsas, G., Daveas, S., **Danelakis, A.** and Thomopoulos, S.C., 2019, September. Automated real-time anomaly detection in human trajectories using sequence to sequence networks. In 2019 16th IEEE International Conference on Advanced Video and Signal Based Surveillance (AVSS) (pp. 1-8). IEEE.

2019 Thomopoulos, S.C., Daveas, S. and **Danelakis, A.**, 2019, May. Automated real-time risk assessment for airport passengers using a deep learning architecture. In Signal Processing, Sensor/Information Fusion, and Target Recognition XXVIII (Vol. 11018, pp. 212-223). SPIE.

2015 **Danelakis, A.**, Theoharis, T. and Pratikakis, I., 2015, May. A spatio-temporal descriptor for dynamic 3 D facial expression retrieval and recognition. In Proceedings of the 2015 Eurographics Workshop on 3D Object Retrieval (pp. 63-70).

2014 **Danelakis, A.**, Theoharis, T. and Pratikakis, I., 2014, April. Geotopo : Dynamic 3D facial expression retrieval using topological and geometric information. In Proceedings of the 7th Eurographics Workshop on 3D Object Retrieval (pp. 1-8).

2012 **Danelakis, A.**, Theoharis, T. and Pratikakis, I., 2012, October. 3d mesh video retrieval : A survey. In 2012 3DTV-Conference : The True Vision-Capture, Transmission and Display of 3D Video (3DTV-CON) (pp. 1-4). IEEE.

2011 Spyropoulos, B., Oikonomi, E., **Danelakis, A.**, Karaboulas, K., Kotsiliti, E., Maridaki, E., Papageorgiou, L., Papalexis, E., Sakellarios, C., Zogogianni, D. and Botsivaly, M., 2011. A web-based System supporting the Certification of the Outpatient and Emergency Departments and providing for post-discharge Continuity of medical Care Software. In 5th European Conference of the International Federation for Medical and Biological Engineering (pp. 721-724). Springer, Berlin, Heidelberg.

Book Chapters

2019 Thanos, K.G., Polydouri, A., **Danelakis, A.**, Kyriazanos, D. and Thomopoulos, S.C., 2019. Combined deep learning and traditional NLP approaches for fire burst detection based on twitter posts. In Cyberspace. IntechOpen.

2012 Christou, D., **Danelakis, A.**, Mitrouli, M. and Triantafyllou, D., 2012. Computer Graphics Techniques in Military Applications. In Applications of Mathematics and Informatics in Military Science (pp. 77-85). Springer, New York, NY.