Melinos Averkiou

Curriculum Vitae

Contact Information

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Research Interests

My research lies at the intersection of computer vision, machine learning, and computer graphics, focusing on machine learning for discovering semantics from 3D and 2D data. I am particularly interested in deep neural network architectures for acquiring, modelling, and understanding the semantics of real-world environments at multiple scales, ranging from objects, scenes, buildings, and ultimately entire cities. This knowledge enables intelligent tools for scene understanding with important applications in engineering, artificial intelligence, robotics, and extended reality.

Education

University College London, London, UK — 10/2011 – 10/2015
Department of Computer Science
PhD in Computer Science
Thesis: Data-driven Modelling of Shape Structure
Advisor: Prof. Niloy Mitra

Stanford University, Palo Alto, USA — 08/2014 – 09/2014
Geometric Computing Group
Visiting PhD student
Advisors: Prof. Leonidas Guibas & Dr Vladimir Kim

University of Cambridge, Cambridge, UK — 10/2009 – 10/2010
Computer Laboratory
MPhil in Advanced Computer Science (GPA: 75/100)
Thesis: 3D Interfaces for 3D Modelling
Advisor: Prof. Neil Dodgson

University of Cyprus, Nicosia, Cyprus — 09/2005 – 06/2009
Department of Computer Science
BSc in Computer Science (GPA: 9.3/10), ***summa cum laude* - top of the class**
Thesis: A multi-touch interface for 3D navigation inside the virtual world of a museum exhibit
Advisor: Prof. Yiorgos Chrysanthou

Professional Experience

CYENS Centre of Excellence, Nicosia, Cyprus — 07/2019 – present
Visual Computing Group (VCG)
Research Group Leader
Leading a team of researchers working on deep neural networks for the acquisition and semantic understanding of real environments at multiple scales, ranging from simple objects to entire cities.

University of Cyprus, Nicosia, Cyprus — 10/2018 – present
Department of Computer Science
Senior Research Scientist
Principal investigator for the ANNFASS project, funded by the Cyprus Research Promotion Foun-

dation with €250k. The aim of ANNFASS was to develop deep neural networks for segmenting historical buildings into semantic parts and understanding their architectural style.
Course instructor for Computer Vision (CS447, MAI644), Deep Learning (DSC515), Computer Games Engineering (CS653).

University of Cyprus, Nicosia, Cyprus 10/2015 – 09/2018
Department of Computer Science
Research Scientist
Research on deep learning for 3D geometric data, funded by a UCY Post-Doctoral Fellowship with ∼ €44k. Results were published in CVPR 2017, the top computer vision conference (410 citations to date).
Course instructor for Visual Computing (CS607), Computer Games Engineering (CS653), Programming Problem Solving Methods (CS032).

Shenzhen Institutes of Advanced Technology, Shenzhen, China 10/2015 & 01/2016
Visual Computing Research Center
Visiting Research Scientist
Research on feature learning methods for locating style-defining shape elements, published in ACM Transactions on Graphics, the top computer graphics journal (impact factor 6.2).

Grants

- Cyprus Research & Innovation Foundation *Infrastructures* Grant – €700.000 2023 – present
  Co-principal Investigator
- HORIZON *CL2-2021-HERITAGE-01-04* Grant – €600.000 2022 – present
  Co-principal Investigator
- CYENS Centre of Excellence Internal Research Grant – €50.000 2022 – present
  Principal Investigator
- Cyprus Research & Innovation Foundation *PRE-SEED* Grant – €100.000 2021 – present
  Principal Investigator
- CYENS Centre of Excellence Starting Grant – €190.000 2019 – present
  Principal Investigator
- Cyprus Research & Innovation Foundation *EXCELLENCE* Grant – €250.000 2018 – 2021
  Project Coordinator
- NVIDIA GPU Grant – €2.500 & €1.500 2017 & 2018
  Principal Investigator

Fellowships & Scholarships

- University of Cyprus Post-Doctoral Fellowship – €44.000 2016 – 2018
- University College London Studentship Award (Funded by EPSRC) – £86.000 2011 – 2015
- Rabin Ezra Scholarship Trust Bursary – £5.000 2014
- Cyprus State Scholarship Foundation PhD Scholarship – €15.000 2011 – 2014
- A.G. Leventis Foundation – PhD Scholarship £5.000 2011 – 2012
- University of Cambridge Studentship Award (Funded by EPSRC) – £15.500 2009 – 2010
- Cyprus State Scholarship Foundation MSc Scholarship – €5.000 2009 – 2010
- A.G. Leventis Foundation MSc Scholarship – £5.000 2009 – 2010
- Darwin College Cambridge Bursary – £1.000 2009

Honors & Awards

- British Computer Society Distinguished Dissertation Competition, nominated — 2016
- Eurographics Award for Best PhD Thesis, nominated – short-listed — 2016
- Eurographics Best Paper Award, 2nd prize — 2014
- Cyprus RIF *Students in Research* Competition, 1st prize – €3.500 — 2010
- Youth Board of Cyprus Postgraduate Award – €1.700 — 2009
- Cyprus RIF *Students in Research* Competition, 2nd prize – €3.400 — 2009
- Highest GPA in Univ. of Cyprus Computer Science Dept. (three awards) – €3.400 — 2009

Teaching Experience

University of Cyprus, Nicosia, Cyprus
Department of Computer Science
Instructor for the following courses:

- MAI644 – Computer Vision — Fall 2023
- DSC515 – Deep Learning — Fall 2022
- CS447 – Computer Vision — Spring 2021–2022
- CS653 – Computer Games Software Engineering — Spring 2016–2019
- Computer Games Summer School — Summer 2016
- CS607 – Visual Computing — Fall 2015
- CS032 – Programming Problem Solving Methods — Fall 2015

University College London, London, UK
Department of Computer Science
Teaching Assistant for Image Processing (GV12) course — Fall 2012–2013

Supervision

PhD Students

- Yeshwanth Kumar (CUT) — 2021 – present
- Yiangos Georgiou (UCY) — 2020 – present
- Marios Loizou (UCY) — 2018 – present

MSc Students

- Menghang Hao (UCL) — 2022
- Yicheng Zhan (UCL) — 2022
- Jiamin Wang (UCL) — 2021
- Maria Maslioukova (UCY - distinction) — 2021
- Kyriakos Zantis (UCY - distinction) — 2019
- Sergios Stamatis (UCY - distinction) — 2018

BSc Students

- Andreas Mylidonis (UCY) — 2021
- Stephanos Kyriakides (UCY) — 2018
- Christos Othonos (UCY - distinction) — 2017

Interns

- Nima Alizadeh — Summer 2022

- Andreas Kouzelis — Summer 2021
- Manos Papageorgiou — Summer 2020
- Pardis Ghaz — Year-round 2020
- Mona Hodaei — Year-round 2020
- Elie El Hachem — Summer 2019

Professional Activities

Program Committees

- Eurographics - Posters Chair — 2024
- CVPR Workshop on Structural and Compositional Learning on 3D Data — 2023
- Shape Modeling International — 2018–202
- International Symposium on Visual Computing — 2018–2022
- Computer Graphics International — 2018–2019
- WSCG Conference on Computer Graphics, Visualization and Computer Vision — 2017
- IEEE Melecon — 2016
- SIGGRAPH Asia Workshop on Creative Shape Modeling and Design — 2014

Reviewer in International Journals

ACM Transactions on Graphics, Computer Graphics Forum, IEEE Transactions on Visualization and Computer Graphics, Computers and Graphics, Graphical Models, Computer Graphics and Applications, Journal of Artificial Intelligence Research, Knowledge-Based Systems

Reviewer in International Conferences

CVPR, ICCV, ECCV, SIGGRAPH, SIGGRAPH Asia, Eurographics, Pacific Graphics, Computer Graphics International, Shape Modeling International, International Symposium on Visual Computing

Administration Duties

CYENS Centre of Excellence, Nicosia, Cyprus

- IT Infrastructure Committee – Member — 2023–present
- AI Cluster Committee – Chair — 2021–present
- Doctoral Training Program Committee – Chair — 2020–2022
- Scientific Council – Member — 2019–present

Journal Publications

[1] Loizou, M., Garg, S., Petrov, D., **Averkiou, M.**, Kalogerakis, E. 2023. Cross-Shape Attention for Part Segmentation of 3D Point Clouds. *Computer Graphics Forum 42*, 5. (also presented in *SGP 2023*) (project website)

[2] Artopoulos, G., Maslioukova, M.I., Zavou, C., Loizou, M., Deligiorgi, M., **Averkiou, M.** 2022. An Artificial Neural Network Framework for annotating and classifying Architectural Structure and Style of Built Heritage in 3D. *Journal of Cultural Heritage 63*, 135–147 (project website)

[3] Deligiorgi, M., Maslioukova, M.I., **Averkiou, M.**, Andreou, A.C., Selvaraju, P., Kalogerakis, E., Patow, G., Chrysanthou, Y. and Artopoulos, G., 2021. A 3D digitisation workflow for architecture-specific annotation of built heritage. *Journal of Archaeological Science: Reports, 37*, p.102787. (project website)

[4] Loizou, M., **Averkiou, M.**, Kalogerakis, E. 2020. Learning Part Boundaries from 3D Point Clouds. *Computer Graphics Forum 39*, 5, 183—195. (also presented in *SGP 2020* - acceptance rate: 36%) (project website)

[5] Hu, R., Li, W., van Kaick, O., Huang, H., **Averkiou, M.**, Cohen-Or, D., Zhang, H. 2017. Co-Locating Style-Defining Elements on 3D Shapes. *ACM Transactions on Graphics 36*, 3, 33:1–33:15. (also presented in *SIGGRAPH 2017* - acceptance rate: 28%) (project website)

[6] **Averkiou, M.**, Kim, V.G., Mitra, N.J. 2016. Autocorrelation Descriptor for Efficient Co-alignment of 3D Shape Collections. *Computer Graphics Forum 35*, 1, 261–271. (also presented in *Eurographics 2016*) (project website)

[7] Fish, N.*, **Averkiou, M.***, van Kaick, O., Sorkine-Hornung, O., Cohen-Or, D., Mitra, N. J. 2014. Meta-representation of Shape Families. *ACM Transactions on Graphics 33*, 4, 34:1-34:11. *joint first authors. (also presented in *SIGGRAPH 2014* - acceptance rate: 25%) (project website)

[8] **Averkiou, M.**, Kim, V.G., Zheng, Y., Mitra, N.J. 2014. ShapeSynth: Parameterizing Model Collections for Coupled Shape Exploration and Synthesis. *Computer Graphics Forum 33*, 2, 125-134. (also presented in *Eurographics 2014* - acceptance rate: 25%) (project website)

[9] Zheng, Y., Cohen-Or, D., **Averkiou, M.**, Mitra, N.J. 2014. Recurring Part Arrangements in Shape Collections. *Computer Graphics Forum 33*, 2, 115-124. (also presented in *Eurographics 2014* - acceptance rate: 25% - **Best Paper Award, 2nd prize**) (project website)

Conference Publications

[10] Georgiou, Y., Loizou, M., Kelly, T., **Averkiou, M.** 2024. FacadeNet: Conditional Facade Synthesis via Selective Editing. In *Proceedings of Winter Conference on Applications of Computer Vision (WACV)*.

[11] Georgiou, Y., **Averkiou, M.**, Kelly, T. Kalogerakis, E. 2021. Projective Urban Texturing. In *Proceedings of International Conference on 3D Vision (3DV)*, 1034–1043. (project website)

[12] Selvaraju, P., Nabail, M., Loizou, M., Maslioukova, M., **Averkiou, M.**, Andreou, A., Chaudhuri, S., Kalogerakis, E. 2021. BuildingNet: Learning to Label 3D Buildings. In *Proceedings of IEEE/CVF International Conference on Computer Vision (ICCV)*, 10377–10387. **Oral Paper (acceptance rate for oral papers: 3%)** (project website)

[13] Lin, H., **Averkiou, M.**, Kalogerakis, E., Kovacs, B., Ranade, S., Kim, V. G., Chaudhuri, S., Bala, K. 2018. Learning Material-Aware Local Descriptors for 3D Shapes. In *Proceedings of International Conference on 3D Vision (3DV)*, 150–159.

[14] Kalogerakis, E., **Averkiou, M.**, Maji, S., Chaudhuri, S. 2017. 3D Shape Segmentation with Projective Convolutional Networks. In *Proceedings of IEEE Conference on Computer Vision and Pattern Recognition (CVPR)*, 3779–3788. **Oral Paper (acceptance rate for oral papers: 2.65%)** (project website)

[15] Zheng, S., Prisacariu, V. A., **Averkiou, M.**, Cheng, M. M., Mitra, N. J., Shotton, J., Torr,

P.H.S., Rother, C. 2015. Object Proposals Estimation in Depth Image Using Compact 3D Shape Manifolds. In *Lecture Notes in Computer Science, vol 9358 – Proceedings of German Conference on Pattern Recognition (GCPR)*, 196–208. (project website)

[16] **Averkiou, M.**, Mitra, N.J. 2012. Automatic Alignment of Shape Collections. In *Proceedings of Eurographics 2012 - Posters Track*.

[17] **Averkiou, M.**, Dodgson, N. 2011. Comparison of relative (mouse-like) and absolute (tablet-like) interaction with a large stereoscopic work-space. In *Proceedings of the Stereoscopics Displays and Applications XXII Conference*.

[18] **Averkiou, M.**, Chrysanthou, Y. 2009. Evaluating a multi-touch interface for 3D navigation inside the virtual world of a museum exhibit. In *Proceedings of the 10th VAST International Symposium on Virtual Reality, Archaeology and Cultural Heritage*.

[19] Kunkel, T., **Averkiou, M.**, Chrysanthou, Y. 2008. A web-based virtual museum application. In *Proceedings of the 14th International Conference on Virtual Systems and Multimedia*.