Dr. Sofia Kyratzi

Lecturer

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Curriculum Vitae

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Personal Details

Full Name:	Sofia Kyratzi
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Discipline

Geometric Modeling for Industrial Design (CAD)

Research Interests

Parametric and Geometric modeling of 2D sketches, 3D models and surfaces, Computational Geometry, Computer Aided Design, Computer Graphics, 3D model reconstruction from a single sketch, Geometric Design Intent.

Areas of Specialization

(E1) *Computer Aided Sketching and 3D Reconstruction from sketch*: Methods and algorithms for the 3D model reconstruction from a single sketch, topologic and geometric analysis of sketches, sketch interpretation, sketch realizability.

(E2) *Geometric Modeling:* 3D representation of curves, surfaces and solids, T-Spline surfaces, reverse engineering, and optimization methods.

(E3) *Design Intent*: Parametric modeling using design intent methodologies, capturing and communication of geometric design intent in sketches or solids, teaching design by design intent methods.

(E4) *Interaction methods in CAD*: Human computer interaction of 2D and 3D modeling environments, computer aided sketching environments.

Education

2002 – 2007	*PhD – Department of Product and Systems Design Engineering, University of the Aegean.*
	Phd Thesis: "Industrial-Product Concept Development: Geometric and Information Models for Interactive Design".

Research Topics: CAD, Geometric Modeling, Computer Graphics, Solid Modeling, Sketch Interpretation, Realizability of a Sketch, Computer Mathematics.

Under the Scholarship Program "Iraklitos: Research Scholarships in the University of the Aegean".

Supervising committee: prof. N.S. Sapidis, prof. P. Kaklis, prof. N. Patrikalakis.

2000 – 2002   ***Msc in Medical Informatics,***

Medical Department, Aristotle University of Thessaloniki

*MSc Thesis: "*An Integrated Tele – Echography System: An Environment for presentation and processing DICOM images."

Research Topic: Human Computer Interaction, Image Processing, Medical Images.

 Supervising committee: prof. M. Strintzis, prof. N. Maglaveras.

1995 – 2000   ***BSc in Mathematics***,

Department of Mathematics, Aristotle University of Thessaloniki.

Employment

December 2014 - present	*Lecturer* – Department of Product and Systems Design Engineering, University of the Aegean.
February 2006 – June 2014	*Instructor* – Department of Product and Systems Design Engineering, University of the Aegean.

Academic Teaching

Undergraduate Courses

- **Introduction to Computer-Aided Geometric Design**, Academic Years 2009-2010 until 2019-2020, Winter Semester.

- **Computer Graphics**, Academic Years 2020-2021-2022, Winter Semester.

- **Computer Aided Design**, Academic Year 2020-2021, Spring Semester.

- **Engineering Drawing**, Academic Years 2009-2010 until 2012-2020, Spring Semester.

- **Design for Additive Manufacturing**, Academic Years 2018-2019 until present, Spring Semester.

- **Studio 7b – Detailed Product Design**, Academic Years 2017-2018 – until present, Winter Semester.

Postgraduate Courses

Postgraduate Program "Integrated Product Design & Innovation (IPDI)" - Department of Product and Systems Design Engineering, University of the Aegean.

- Academic Years 2016-2017 until present
    - Computer Aided Design
    - Studio – Detailed Product Design

Summer Schools Teaching & Organization

July 2019   PRODECT 2019 - Industrial Product Design and Concept Development
https://summer-schools.aegean.gr/PRODECT2019

- Parametric Design with Creo

July 2017   PRODECT 2017 - Industrial Product Design and Concept Development
https://summer-schools.aegean.gr/PRODECT2017

- Parametric Design
- Parametric Design with Creo

July 2015   PRODECT 2015 - Industrial Product Design and Concept Development
https://summer-schools.aegean.gr/PRODECT2017

July 2014   ACADEM'14 - Advanced technologies in Product Design, Engineering and Manufacturing - https://academ2014.pns.aegean.gr/

- CAD Lab: Design using Creo
- Solid Modeling
- From Sketch to Solid

July 2013   ACADEM'13 - Advanced technologies in Product Design, Engineering and Manufacturing) - https://academ2013.pns.aegean.gr/

- Solid Modeling
- Sketch Based Design and Design Intent

September 2012   SuSeDe 2012 (Emerging Theories, Methodologies and Applications in the area of Design: Sustainability & Service Design – Erasmus Intensive Programmes): http://www.susede.syros.aegean.gr/

- Computer Aided Service Design

Research and Scientific Work

Academic R&D Projects

University of the Aegean – Department of Product and Systems Design Engineering

2020-2023: Digital Transformation of South Aegean Sea in Culture and Tourism, Operational Programme Competitiveness, Entrepreneurship & Innovation – EPAnEK (Researcher, S.C.: prof. P. Azariadis)

2012-2014: Development of cost-effective and accurate computer-aided design and engineering (CAD/CAE) tools for the determination and optimization of footwear comfort parameters (OPT-SHOES). Research Program "Aristeia" (Researcher, S.C.: prof. P. Azariadis).

2006 – 2008: Visual Environment for Furniture Presentation, R&D Project funded by ELKEDE (Researcher, S.C.: Assoc. Prof. N. Sapidis).

2007: A New Parametric CAD system for the Reconstruction of Traditional Jewellery, R&D Project funded by ELKA (Researcher, S. C.: Asist. Prof. P. Azariadis).

2005: A modern 2D/3D CAD system for apparel design, R&D Project funded by ELKEDE (Researcher, S.C.: Assoc. Prof. N. Sapidis).

2004: Information Management and Exchange in Network-Centric Product Design: Modeling Component Knowledge in Design Repositories, Bilateral R&T Programme Greek-France 2003-2005, (Researcher, S.C.: Assoc. Prof. N. Sapidis).

2002–2006: Industrial-Product Concept Development: Geometric and Information Models for Interactive Design, funded by Greek Ministry of Education and Religious Affairs, "Irakleitos" Project: fundings for PhD research. In cooperation with Massachusetts Institute of Technology (MIT), USA.

September 2001 – October 2002: Information Technology Institute (ITI - CERTH HELLAS)

Research Program OTELO (IST-2001-32516, mObile Tele-Echography using an ultra-Light rObot), (Researcher, S.C.: M. Strintzis).

Publications

International Journal Publications

(J11) S. Kyratzi & P. Azariadis, **Integrated Design Intent of 3D Parametric Models,** *Computer-Aided Design*, *accepted - January 2022*.

(J10) Antonio Jimeno-Morenilla, Philip Azariadis, Rafael Molina-Carmona, Sofia Kyratzi, Vassilis Moulianitis, **Technology enablers for the implementation of Industry 4.0 to traditional manufacturing sectors: a review,** *Computers in Industry, 25, 2021*

(J9) S. Kyratzi & P. Azariadis, **A constraint-based framework to recognize design intent during sketching in parametric environments**, *Computer-Aided Design and Applications, 18(3), pp. 545-560, 2021*.

(J8) Z. Koutkalaki, P. Papagiannis, P. Azariadis, P. Papanikos, S. Kyratzi, D. Zissis, D. Lekkas, E. Xidias, **Towards a foot bio-model for performing finite element analysis for footwear design optimization using a Cloud infrastructure**, *Computer-Aided Design and Applications, 12(3), 507-518, 2015*.

(J7) S. Kyratzi & P. Azariadis, **Geometric Definition of the Hidden Part of a Line Drawing in a Sketch-to-Solid Methodology**, *Computer-Aided Design and Applications, 12(3), 355-365, 2015*.

(J6) P. Azariadis, S. Kyratzi, N.S. Sapidis, **A hybrid-optimization method for assessing the realizability of wireframe sketches**, *3D Research, 4(1), Article: 3, 2013*.

(J5) S. Kyratzi, P. Azariadis, N.S. Sapidis, **Realizability of a Sketch: An Algorithmic Implementation of the Cross-Section Criterion,** *Computer Aided Design and Applications, 8(5), pp. 665-679, 2011*.

(J4) S. Kyratzi & N. Sapidis, **3D Object Modeling using Sketches**, *Information Resources Management Journal (IRMJ), 24(4), pp. 27-49, 2011*.

(J3) S. Kyratzi & N. Sapidis, **From Sketch to Solid: An Algebraic Cross-Section Criterion for the Realizability of a Wireframe Sketch**, *Computing, 86(2-3), pp. 219-234, 2009*.

(J2) S. Kyratzi & N. Sapidis, **Extracting a Polyhedron from a Single-View Sketch: Topological Construction of a Wireframe Sketch with Minimal Hidden Elements**, *Computers & Graphics, 33(3), pp. 270-279, 2009*.

(J1) N. Sapidis, S. Kyratzi and P. Azariadis, **Improved Computational tools for Concept Development based on Sketches and Advanced CAD**, *Computer-Aided Design and Applications, 2(6), pp. 707-716*, 2005.

International Conference Publications

(C5) S. Kyratzi & P. Azariarids **Cloud Computing as a Platform for Design-Oriented Applications**, in 24th Pan-Hellenic Conference on Informatics (PCI 2020), November 20–22, 2020, Athens, Greece. ACM Press.

(C4) S. Kyratzi & N. Sapidis, **An Interactive Sketching Method for 3D Object Modeling**, 3rd ACM International Conference on Digital Interactive Media in Entertainment and Arts (DIMEA 2008), Athens, Greece, 10-12 September 2008, pp. 335-342, ACM Press.

(C3) S. Vosinakis, P. Azariadis, N. Sapidis, S. Kyratzi, **A Virtual Reality Environment Supporting the Design and Evaluation of Interior Spaces**, *4th INTUITION International Conference and Workshop on Virtual Reality and Virtual Enviroments, 4-5 October 2007, Athens*.

(C2) S. Kyratzi, C. Collyda, G. Nikolakis, G.A. Triantafyllidis, D. Tzovaras, P. Daras and M. G. Strintzis, **A User Interface Environment in Mobile Tele-echography**, Proc. International Academic Conference on eHealth Telemedicine and Telecare, TELEMED 03, London, January 2003.

(C1) Ch. Collyda, S. Kyratzi, G. Triantafyllidis, N. Boulgouris and M. G. Strintzis, **The Dicom Viewer for the Otelo Tele-Echography System**, *in Proc 6th World Multiconferece on Systemics, Cybernetics and Informatics (SCI 2002), Orlando, USA, 2002*.

Books

(B1) Ph. Azariadis, S. Kyratzi, K. Bailas, Introduction to Computer – Aided Parametric Modeling – Design with PTC Creo Parametric (in Greek), Open Electronic Books - Kallipos+ (to be published in 2022).

Citations (17/1/2022)

- Google scholar 80, Scopus 51.
- h-Index: Google scholar 5, Scopus 4.

Editor and Reviewer Work

International Journal Editor

- Computers in Industry: Guest editor for the special issue "Technology enablers for the implementation of Industry 4.0 to traditional manufacturing sectors"

Reviewer of Scientific Journals

- Computer Aided Design (2009 – 2010)
- International Journal of Computer Mathematics (2011)
- 3D Research (2011 – 2018)
- International Journal of Mediterranean Archaeology & Archaeometry (2013)

Reviewer of Scientific Conferences

- 27th International Conference on Computer Graphics, Visualization and Computer Vision, May 27 - 31 , 2019, Plzen [Pilsen], Czech Republic.
- 12th International Conference on Health Informatics - HEALTHINF 2019, 22-24 February, 2019, Prague, Czech Republic.
- 11th International Conference on Health Informatics - HEALTHINF 2018, 19-21 January, 2018, Funchal, Madeira - Portugal.
- Eurographics 2017, 24-28 April, 2017, Lyon, France.
- 10th International Conference on Health Informatics - HEALTHINF 2017, 21-23 February, 2017, Porto, Portugal.
- Computer Graphics International, June 28 - July 1, 2016,   Heraklion, Crete, Greece.
- 9th International Conference on Health Informatics - HEALTHINF 2016, 21-23 February, 2016, Rome, Italy.
- Conference on Geometric and Physical Modeling (GD/SPM15), 12-14 October, 2015, Salt Lake City, Utah, USA.
- 8th International Conference on Health Informatics - HEALTHINF 2015, 12-15 January, 2015, Lisbon, Portugal.
- Computer Graphics International, 12 – 14, June, 2013, Hannover, Germany.
- 21st International Conference in Central Europe on Computer Graphics, Visualization and Computer Vision (WSCG13), 24 – 27 June, 2013, Plzen [Pilsen], Czech Republic.

- 11th International Conference on Computer Graphics, Visualization and Computer Vision, (held in co-operation with EUROGRAPHICS), January 31 - February 3, 2011, Plzen [Pilsen], Czech Republic.

- Computer Graphics International, 8-11 June, 2010, Singapore.

Teaching and Research Software tools

Programming Languages:	C/C++, Pascal, βιβλιοθήκες γραφικών OpenGL & GLUT, IMSL.
Programming Environments:	Visual Studio, Delphi.
3D Modeling Software:	AutoCAD, Creo Parametric, Inventor, SolidWorks
Other Software	Flash, Matlab, Mathematica