CURRICULUM VITAE

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EDUCATION & DEGREES

1987 Ph.D. Mechanical Engineering, NTUA.
1982 B.S./M.S. Mechanical Engineering, NTUA.

SCHOLARSHIPS & AWARDS

Special Postgraduate Scholarship, NTUA (1986-87); Scholarship for Postgraduate Studies, Bodosakis Foundation (1982-84); Award, Technical Chamber of Greece (1979-80); Award, Greek Federal Fellowship Foundation (1977-82)

PROFESSIONAL EMPLOYMENT

- **1988-present :**

NATIONAL TECHNICAL UNIVERSITY OF ATHENS, SCHOOL OF MECH. ENG., Athens
(1988-93: Research Engineer, 1993-1998: Lecturer, 1998-2004: Assistant Professor, 2004-2010: Associate Professor, 2010-: Professor)
Teaching & Research Staff Member; duties and responsibilities as below.

- **1987-1988 :**

HELLENIC AIRFORCE-RESEARCH TECHNOLOGY CENTER (KETA), Athens
(Research Engineer-Military Service).
Developed software related to store separation trajectories for Northrop F-5A Fighter A/C. Worked on an experimental set-up for in-flight testing.

- **1983-1984 :**

ELECTRICITE DE FRANCE (EDF) ; DIRECTION DES ETUDES ET RECHERCHES, Paris
(Research Engineer-Trainee)
Participated in the development of a finite-difference code for the numerical solution of incompressible, viscous flows in turbomachinery cascades.

ASSIGNED TEACHING DUTIES

- Undergraduate Courses given by the School of Mech. Eng. NTUA:

Thermal Turbomachines, Computational Methods in Turbomachines, Operating System and Programming Languages, Optimization Methods, Numerical Analysis.

- Postgraduate Courses in 3 Inter-Departmental Post-Graduate Programs of NTUA:

Computational Methods & Solution Algorithms, Grid Generation, Optimization Methods.

RESEARCH INTERESTS & ACTIVITIES

- Development of Computational Fluid Dynamics (CFD) methods and software for single- and two-phase flows, on structured and unstructured grids, including grid generation methods. Application in turbomachines and external aerodynamics.
- Development of Optimization Methods (including Evolutionary Methods, Artificial Intelligence, discrete and continuous, high-order Adjoint Methods).
- Development of Analysis and Design of Turbomachinery Components
- Parallelization of CFD/Optimization methods on multiprocessor platforms and Graphics Processing Units (GPUs), including Grid Computing.

Professor K. Giannakoglou worked for more than 30 years in many Research Projects; he was/is scientific responsible (within NTUA) of ~100 of them. He is head of the Parallel CFD & Opimization Unit of the

NTUA, with activities related to the development and validation of CFD-based optimization methods for engineering applications. His group activities are/were funded by the EU (INGENET Thematic Network, HISAC/FP6, ACFA2020/FP7, HYDROACTION, AQUAGEN, RBF4AERO, ABOUTFLOW, IODA, SMARTANSWER, FORTISSIMO), European industrial outfits (three car industries, two turbomachinery industries, one airframer), SMEs (developing optimization s/w) and the Greek Secretariat for Research and Technology or NTUA, mostly through PhD grants. Some of the optimization tools developed by PCOpt/LTT, in the form of a commercial optimization platform (software *EASY: Evolutionary Algorithms SYstem*) is now in use by academic and industrial groups.

ORGANIZATION OF INTERNATIONAL CONFERENCES

- Workshop entitled "*ECARP-Massively Parallel Processing for Navier-Stokes*", Sophia-Antipolis, France, June 1995; co-editor of its proceedings published in *Notes on Numerical Fluid Mechanics* (Vieweg, "*Optimum Aerodynamic Design & Parallel Navier-Stokes Computation*", Vol. 61). Co-Chairman.
- "*EUROGEN2001 - Evolutionary Methods for Design, Optimization and Control with Applications to Industrial Problems*", Athens, 19-21/9/2001. Organizer-Chairman. Editor of Proceedings.
- "*ERCOFTAC Design Optimization: Methods & Applications*", Athens, 31/3-2/4/2004. Organizer-Chairman. Editor of Proceedings.
- VKI Lecture Series, entitled "*Numerical Optimization Methods & Tools for Multi-Criteria/Multi-Disciplinary Design with Applications to Aeronautics and Turbomachinery*", duration: one week, Von Karman Institute, Brussels, November 2004. Co-Chairman.
- ECCOMAS Thematic Conference "CFD & Optimization: Methods and Applications", Antalya, Turkey, 23-25/5/2011.
- "*EUROGEN 2011 Evolutionary and Deterministic Methods for Design, Optimization and Control with Applications to Industrial and Societal Problems*", Capua, Italy, 14-16/9/2011.
- "*ERCOFTAC Course on Design Optimisation: Methods and Applications*", Manching, Germany, 15-16/11/2011. Chairman.

HONORARY POSITIONS

Chairman of the ERCOFTAC (European Research Community on Flow Turbulence & Combustion) Special Interest Group (SIG 34) on Design-Optimization (since May 2007).

PUBLICATIONS - CITATIONS

68 Refereed Journal papers; 6 Chapters in Books (Upon Invitation); ~130 Presentations in Scientific Conferences; 12 Lectures in the Lecture Series Program of the von Karman Institute (Upon Invitation).
About 1000 citations, excluding self-citations

NTUA PhD THESIS ADVISOR

Concluded: (1) A.Giotis, "*Application of evolutionary algorithms, computational intelligence and advanced computational fluid dynamics techniques to the optimization - inverse design of turbomachinery cascades, using parallel processing*", 2003. (2) N.Lambropoulos, "*Multigrid techniques and parallel processing for the numerical prediction of flow fields through thermal turbomachines, using unstructured grid*", 2005. (3) M.Karakasis, "*Hierarchical, distributed evolutionary algorithms and computational intelligence in aerodynamic shape optimization, on multiprocessing systems*", 2006. (4) D.Papadimitriou, "*Adjoint formulations for the analysis and design of turbomachinery cascades and optimal grid adaptation using a posteriori error analysis*", 2007. (5) P.Liakopoulos, "*Unstructured grid generation in analysis and optimization methods for turbomachinery components, using Grid Computing*", 2008. (6) V.Asouti, "*Aerodynamic analysis and design methods at high and low speed flows, on multiprocessor platforms*", 2009. (7) C.Georgopoulou, "*Optimization techniques for committing combined cycle power plants and designing their components*", 2009. (8) I.Kampolis, "*Parallel, multilevel algorithms for the aerodynamic optimization in turbomachines*", 2009. (9) A.Zymaris, "*Adjoint methods for the design of shapes with optimal aerodynamic performance in laminar and turbulent flows*", 2010. (10) T.Zervogiannis, "*Optimization methods in aerodynamics and turbomachinery based on the adjoint technique, hybrid grids and the exact Hessian matrix*", 2011. (11) E.Kontoleontos, "*Designing thermo-fluid systems using gradient-based optimization methods and evolutionary algorithms*", 2012. (12) X.Trompoukis, "*Solving aerodynamic-aeroelastic problems on Graphics Processing Units*", 2012. (13) S.Kyriacou, "*Evolutionary algorithm-based design-optimization methods in turbomachinery*", 2013. (14) E.Papoutsis–Kiachagias, "*Adjoint methods for turbulent flows, applied to shape or topology optimization and robust design*", 2013. (15) *I. Kavvadias,*

"*Continuous Adjoint Methods for Steady and Unsteady Turbulent flows with Emphasis on the Accuracy of Sensitivity Derivatives*", *2016.*

Running: (1) K.Tsiakas, "*Development of optimization methods for use on GPU clusters and applications to turbomachines*". (2) G.Karpouzas, "*Topology optimization based on OpenFOAM continuous adjoint solver*". (3) G.Ntanakas, *"The adjoint method for use in the regularization of unsteady turbomachinery flows"*. (4) C.Vezyris, "*OpenFOAM-based continuous adjoint method for aerodynamic optimization of unsteady turbulent flows*". (5) C. Kapellos, *"Constrained shape optimization for automotive design"*. (6) K. Samouchos, *"The continuous adjoint method on non-body-fitted grids for use in the optimization of turbomachines"*. (7) D. Kapsoulis, *"Development of prediction models for use in the low-cost evolutionary algorithm based optimization"*. (8) F. Gagliardi, *"Shape parameterization and integrated constrained optimization loops for turbomachinery applications"*. (9) J. Koch, *"Combined shape-topology optimization with constraints for automotive applications"*. (10) I. Vasilopoulos, "*CAD-based and CAD-free aerodynamic optimization of geometrically complex turbomachinery components"*. (11) A. Liatsikouras, "*Automated CAD-free & CAD-based shape optimisation with immersive visualisation"*. (12) M. Damigos, *"Intuitive interfaces for optimisation parameterisation, constraint definition and automated mesh-to-CAD conversion"*. (13) P. Alexias, *"Automated CAD-free adjoint shape optimisation based on harmonic coordinates"*. (14) K. Gkaragkounis, *"Continuous adjoint method with emphasis to turbulence models and applications in aerodynamic shape optimization"*. (15) M. Monfaredi, *"CFD-CAA analysis & optimization methods, with industrial applications"*. (16) P.-Y. Vrionis, *"The continuous adjoint method for single- and two-phase flows, in multi-processor environment"*.