SHORT CURRICULUM VITAE

Joseph Sifakis

1. PERSONAL

Name: **JOSEPH SIFAKIS**

Personal Address: 8 ALLEE DU BOUTET
                           38240 MEYLAN, France

Date and place of birth: December 26, 1946, Heraklion, Greece

Citizenship: Greek and French

2. EDUCATION

▪ Habilitation in Computer Science	1979	University of Grenoble
▪ Ph.D. in Computer Science	1974	University of Grenoble
▪ MS in Computer Science	1972	University of Grenoble
▪ Electrical Engineering Degree	1969	Technical University of Athens

3. DISTINCTIONS AND HONORS

- Turing Award 2007
  (http://awards.acm.org/citation.cfm?id=1167964&srt=all&aw=140&ao=AMTURING&yr=2007)
- Silver Medal of CNRS, 2001
- Leonardo da Vinci Medal 2012 (http://www.sefi.be/?page_id=17)
- Grand Officer of the National Order of Merit, France, 2008
- Commander of the Legion of Honor, France, 2011
- Award of the Greek Parliament for Commonwealth and Democracy, 2010
- Commander of the Order of the Phoenix, Greece 2013
- Member of the French Academy of Sciences, 2010
- Member of Academia Europea, 2008
- Member of the French Academy of Engineering, 2008
- Commander of the Greek Order of the Phoenix, 2012..
- Member of the American Academy of Arts and Sciences, 2015
- Member of the National Academy of Engineering, 2017
- Doctor Honoris Causa : EPFL, University of Athens, International Hellenic University

4. **PROFESSIONAL EXPERIENCE**

Academic Positions

- CNRS researcher at VERIMAG laboratory since 1974 – currently Research Director (Exceptional Class)
- Director of the Center for Integrative Research on Intelligent Software and Systems, Grenoble (2010-today)
- Full Professor at EPFL (Ecole Polytechnique Fédérale de Lausanne), Director of the « Rigorous System Design Laboratory » (October 2011-September 2016)
- Founder and director of the VERIMAG laboratory (1993-2006)
- Director of the Department of Doctoral Studies in Computer Science, Grenoble 1992-1997.
- INRIA-Schneider endowed industrial chair (2008-2011)
- Taught courses: automata theory, logic, languages, formal verification, real-time systems, component-based engineering, system design (1974-today)

Other Academic Responsibilities

- President of the Greek National Council for Research and Technology (February 2014-April 2016)
- Scientific Director of the ARTIST European Network of Excellence on Embedded Systems Design (2004-2012)
- Founding member and member of the Steering Board of the ARTEMISIA European industrial association on Embedded Systems
- Supervised more than 30 PhD's.

Involvement in Companies and Consulting

- Founding member of Synesys SA (France), ASTUS SA (France), Kalray SA (France), ISD SA (Greece)
- Past Bilateral Collaborations: Airbus (Safety Critical Systems - Scade), Astrium (Satellite systems), STMicroelectronics (Design Methods and Tools – Member of the STM Scientific Board), Schneider Electric (Merlin Gerin Nuclear Plant Control Systems), France Telecom (Communication protocol design validation).
- Consultant to several ICT companies and public organizations.

Government Assignments

- President of the Greek National Council for Research and Technology, 2014- May 2016
- Consulting Expert for CEA/DRT (2009-today)
- President of the Working Group of the French Ministry of Education for a National Strategy in Digital Technologies, (2009-2011).
- President or member of national Committees for the Evaluation of Research and Higher Education in France (1990-2009)
- Expert for the Greek Ministry of Education – Research and Technology Secretariat (2000-2014)
- Member of Evaluation Panels for the European Commission and NSF (1990 -2007)
- Expert for the Agency for Science, Technology and Research (A-star), Singapore (2003-2006)

5.   **MAIN CONTRIBUTIONS AND ACHIEVEMENTS**

A list of the most relevant publications is provided at Joseph Sifakis' home pages: http://www-verimag.imag.fr/~sifakis/ and http://people.epfl.ch/joseph.sifakis.
 .
A list of publications classified by year is provided by dblp:
http://dblp.mpi-inf.mpg.de/dblp-mirror/index.php#query=author%3A+joseph+sifakis .
A classification of the publications by their impact is provided by Google Scholar:
 http://scholar.google.com/scholar?q=joseph+sifakis+&hl=en&btnG=Search&as_sdt=2001&as_sdtp=on

Joseph Sifakis has given more than 200 invited talks, keynote lectures and seminars in prestigious conferences, international schools and universities.

5.1 Model-checking

Model-checking is today the most widely used verification technique for the validation of computing systems including hardware, software and web-based applications (http://en.wikipedia.org/wiki/Model_checking). It is extensively used in industry to improve quality of systems and guarantee their essential properties, by companies such as Intel, IBM, Microsoft and Google. It is based on theoretical results developed by Joseph Sifakis, Ed Clarke and Allen Emerson in the beginning of the 80's. For their contribution, the inventors have received in 2007, the Turing Award recognized as the highest distinction in Computer Science and the "Nobel Prize of Computing".
Model-checking has replaced empirical and costly validation techniques such as testing and physical prototyping by a mathematically well-founded exhaustive analysis that guarantees that a system model meets formally specified technical requirements.

Joseph Sifakis has worked for more than 25 years on model checking. His team developed the first model checking tools that have been successfully applied to the validation of safety-critical systems for aircraft and nuclear plants. He has been one of the leading figures of a broad research community organized around the CAV (Computer-Aided Verification) Conference. He has organized the first edition of CAV in Grenoble in June 1989.

Joseph Sifakis' works, including but not limited to combining model checking and model reduction have been essential for the development of several tools that are part of industrial EDA (Electronic Design Automation) for integrated circuits.

5.2 Embedded Systems

Since 1995 Joseph Sifakis has focused his research activities on embedded systems design.
Embedded systems are electronic components integrating software and hardware jointly and specifically designed to provide given functionalities, which are often critical. They are hidden in devices, appliances and equipment of any kind: mobile phones, cameras, home appliances, cars, aircraft, trains, medical devices etc. Embedded Systems break with traditional computing systems such as desktop computers and servers. They must jointly meet technical requirements such as reactivity that is responding within a known and bounded delay, autonomy that is providing continuous service without human intervention, and dependability that is invulnerability to threats including attacks, hardware failures, and software execution errors.
Embedded systems design raises deep theoretical problems as well as hard technical challenges requiring multidisciplinary collaboration and fruitful interaction with industry. Joseph Sifakis contributed to the emergence of the area of embedded systems in Europe and the constitution of an international and live research community. He has been the scientific coordinator of the ARTIST European Network of Excellence that has coordinated research of leading European teams in embedded systems for more than 10 years (http://www.artist-embedded.org/artist/). He

actively worked for setting up the ARTEMISIA industrial association for embedded systems in Europe (http://www.artemisia-association.org/) and has been a member of the Steering Board of this association. He is a co-founder of the EmSoft and of the Embedded Systems Week conferences. He has been for more than five years a member of the Steering Board of Embedded Systems Week (http://www.esweek.org/).

Joseph Sifakis has developed original and groundbreaking work on the formalization of embedded systems design a process leading from given technical requirements to trustworthy and optimized implementations. His work includes the development and implementation of the BIP component framework encompassing a rigorous system design flow. BIP is unique for its expressiveness. It can describe mixed hardware/software systems and relies on a small set of primitives encompassing a general concept of system architecture. BIP has been successfully used in many industrial projects in collaboration with companies such as Thales, STMicroelectronics, Astrium and EADS.

5.3 Research Management

 Joseph Sifakis founded in 1993 the Verimag industrial laboratory, a joint-venture between IMAG (Computer Science and Applied Mathematics laboratory) and VERILOG SA. Verimag has been funded by Airbus and Schneider Electric to develop methods and tools based on results produced by Joseph Sifakis and his team:
1) The SCADE synchronous programming environment based on the Lustre language. SCADE has been used by Airbus for more than 15 years to develop safety critical systems and is becoming a de facto standard for aeronautics. SCADE has been qualified as a development tool by the FAA, EASA, and Transport Canada under DO-178B up to Level A. It is currently been commercialized by Esterel Technologies (http://www.esterel-technologies.com/). SCADE gave a significant competitive advantage to Airbus and drastically contributed to the success of A320, the first "fly-by-wire" commercial aircraft.

2) The ObjectGeode specification and validation tool for real-time distributed applications. The tool includes functional testing and verification techniques developed at Verimag. It has been commercialized by Telelogic SA purchased by IBM in 2008.

Since 1997, Verimag has been a public research laboratory, associated with CNRS and the University of Grenoble. It has played a prominent ole in embedded systems by producing cutting edge research and leading research initiatives and projects in Europe.
Verimag's home page: http://www-verimag.imag.fr/ .

Joseph Sifakis has actively worked in Grenoble for setting up the Minalogic Competitivity Pole. He was the Chairman of the Scientific Board of the EmSoC group which became one of the two components of Minalogic. Since October 2010 Joseph Sifakis is the Scientific Director of CRI (Centre de Recherche Integrative), a R&D center established at the initiative of CEA, Grenoble University, CNRS and INRIA. The aim of CRI is to foster technological convergence between software and hardware and facilitate transfer of research results.

5.4 Contributions to Teaching and Education

For more than 25 years, Joseph Sifakis has actively contributed to teaching formal methods for system design at the University of Grenoble and the Institut Polytechnique de Grenoble. He has been the Chair of the Department of Doctoral Studies in Computer Science in Computer Science for five years. He has actively contributed to the definition of curricula in Computer Science. As the Scientific Director of the Artist European Network of Excellence he has coordinated Working Groups, organized Workshops and contributed to publications on teaching embedded systems. He is the director of the prestigious International Artist Design School organized yearly in France: http://www.artist-embedded.org/artist/-Education,839-.html .