

# CURRICULUM VITAE OF JOSEPH SHANG

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## ***Principal Fields of Interest:***

Fluid Dynamics, Plasmadynamics, and Computational Physics

## ***Experience:***

### **Research Professor, Department of Mechanical and Materials Engineering**

Wright State University, Ohio, From 2002 to present.

### **Leader and Senior Scientist, Center of Excellence for Computing Simulation**

USAF Science and Technology Executive (ST)

Air Vehicles Directorate, Air Force Research Laboratory, From 1998 to 2002.

### **USAF Science and Technology Executive (ST), Senior Scientist**

Flight Dynamics Directorate, Air Force Wright Laboratory, From 1991 to 1998.

### **Technical Manager of Computational Aerodynamics Group**

Wright Laboratory, Wright-Patterson Air Force Base, From 1985 to 1991.

### **Task Team Leader of Computational Aerodynamics Group**

Wright Laboratory, Wright-Patterson Air Force Base, From 1975 to 1985.

### **Aerospace Research Engineer**

Air Force Aerospace Research Laboratory, Wright-Patterson Air Force Base, From 1967 to 1975.

### **Visiting Scientist/Research Associate**

Ohio State University Research Foundation, From 1964 to 1967.

### **Research Fellow/Associate**

Polytechnic Institute of New York, From 1960 to 1964.

### **Second Lieutenant**

Army of the Republic of China, From 1958 to 1960.

## **Education:**

B.Sc. Mechanical Engineering, National Cheng-Kung University, 1954-1958

M.Sc. Aeronautical and Astronautical Engineering, Polytechnic Institute of New York, 1960-1962

Ph.D. Aerospace Engineering, Ohio State University, 1965-1969

## **Academic Experience:**

Adjunct Professor of Air Force Institute of Technology (AFIT), 1976 to present  
Adjunct Professor of University of Dayton, 1988 to present  
Adjunct Professor of Wright State University, 1990 to 2001  
Adjunct Professor of Ohio Aerospace Institute, 1990 to present  
Research Professor of Wright State University, 2002 to present

Organized curriculums and taught computational fluid dynamics (1978, 1979) and turbulent flow (1981, 1982) for AFIT. Design the computational fluid dynamics curriculum for University of Dayton (1989-1993, 2001) and Wright State University (1995). Taught Mechanics of Viscous Fluid Flow (1999), Hypersonic Flows (2002, 2006), and Introduction to Real Gas Dynamics (2003) at Wright State University. Participate as the adjunct advisor for over 20 Ph.D. dissertations and Master theses at AFIT and University of Dayton. He served as co-advisor, Dean's representative, and external examiner on PhD committees for AFIT, University of Dayton, Maryland University, Ohio State University, and Michigan University.

## **Honors/Awards:**

USAF Outstanding Performance/Special Act Awards, 1971, 1974, 1975, 1976, 1978, 1979, 1981, 1982, 1984, 1986, 1987, 1988, 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, and 2001.  
USAF Scientific Achievement Awards, 1973, 1977  
General Foulois Award, 1979, 1985. (Finalist, 1975, 1977, and 1984)  
Outstanding Scientist/Engineer of Dayton, 1980  
USAF/AFSC Primus Award, 1983  
Finalist, Federal Professional Employee of the Year, 1984  
USAF Basic Research Award, 1986  
Fellow of AF Wright Aeronautical Laboratories, 1987  
AIAA Chapter Outstanding Technical Contribution Award, 1988  
Finalist, Inaugural Aviation/Aerospace Discover Awards, Discover Magazine, 1990  
NASA Group Achievement Award, CFD Method Team, 1991  
Distinguished Alumnus Award of the Ohio State University, 1992  
Fellow of American Institute of Aeronautics and Astronautics, 1993  
AFOSR Star Team Award, 1991, 1993  
Computational Technical Area Leader, Department of Defense High Performance Computing Modernization Program, 1994  
Department of Defense High Performance Computing Grand Challenge Project Award, 1996, 1997, and 1998  
USAF Meritorious Civilian Service Award, 1998  
Thomas Davies Lecture Award, 2000  
AFRL Spirit Award, 2000  
USAF Outstanding Civilian Service Awards, 2001  
USAF Exception Civilian Service Award, 2001  
AIAA Sustained Service Award, 2002  
AIAA Plasmadynamics and Laser Award, 2004

## **Publication/Presentations:**

Authored and co-authored over three hundred articles. He has given numerous presentations and seminars to international symposiums and universities, as well as, the invited speaker to workshops and lecture series. He is the author/coauthor of twelve book chapters.

*COMPUTATIONAL METHODS IN VISCOUS FLOWS*, Editor, Habashi, Vol..3, Section 5. Special Methods, with Hankey, W.L., Pineridge Press, Swansen UK, 1984

*NUMERICAL METHODS FOR ENGINE-AIRFRAME INTEGRATION*, Progress in Astronautics and Aeronautics, Volume 102, Chapter 1, Fundamental Consideration, Numerical Solutions of Compressible Navier-Stokes Equations, AIAA 1986

*COMPUTATIONAL METHODS IN HYPERSONIC AERODYNAMICS*, Editor Murthy, Chapter 3, Numerical simulation of hypersonic flows, Computational Mechanics Publications/Kluwer Academic publisher, South Hampton UK, 1991

*COMPUTER SCIENCE AND ENGINEERING HANDBOOK*, Edit-in-Chief Truck, Section IV, Computational science, 39 Computational Electromagnetics, CRC Press, Inc. 1997

*COMPUTATIONAL ELECTROMAGNETICS AND ITS APPLICATIONS*, ICASE/LaRC Interdisciplinary Series in Science and Engineering, Vol. 5, Characteristic-based Methods in Computational Electromagnetics, Kluwer Academic Publishers, Dordrecht, The Netherlands, 1997

*APPROXIMATIONS AND NUMERICAL METHODS FOR THE SOLUTION OF MAXWELL'S EQUATIONS*, Edit by Dabaghi et al, with Shang, C.C., Simulation Electromagnetic Phenomena on an Intel Paragon XP/S, Clarendon Press, Oxford, United Kingdom, 1998

*Computational Fluid Dynamics Review Vol. II*, Edit by Hafez, M. and Oshima, K. IV. Interdisciplinary Applications, World Scientific Publishing, United Kingdom London, 1998

*SOURCEBOOK OF PARALLEL COMPUTING*, Chapter 8, Application overview, Computational Electromagnetics, Morgan Kaufmann Publishers, San Francisco, 2002

*Frontiers of Computational Fluid Dynamics 2002*, Edit by Caughey et al, Progress in Computational Magneto-Aerodynamics, with P. Cannup and D.V. Gaitonde, Publishing, United Kingdom London, 2002

*Vortex Dominated Flows*, Edit by Blackmore et al, Magneto-Fluid-Dynamic Flow control, World Scientific Publishing Co. London UK, 2005

*New Developments in Computational Fluid Dynamics*, Edit by Fujii et al, Hypersonic Magneto-Aerodynamic Interactions, Springer-verlag, Berlin, 2005

*Frontiers of Computational Fluid Dynamics 2006*, Edit by Caughey and Hafez, Chapter 16, Hypersonic Magneto-Fluid-Dynamic Interaction, World Scientific Publishing, United Kingdom London, 2006