CURRICULUM VITAE

Name   **: Selman Nas**
Date of Birth : February 12th 1966
Family Status   : Married and has three children.

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Home: Alemdag Cd. Rifat Bey Sk. No:20/2,
       Uskudar, Istanbul, 81180, Turkey
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Work: Department of Aerospace Engineering,
       Istanbul Technical University,
       Istanbul, Turkey, 34469
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*AREA OF EXPERTISE***:**

Fluid/Thermal Sciences, Computational Fluid Dynamics,
Computational Biofluid Flows,
Physiologic Time Series Analysis,
Analysis of Nonlinear Dynamic Systems in Physiology and Medicine,
Pattern Recognition,
Computer Systems (Software and Hardware),
GPS/GSM Based Fleet Management Systems.

ACADEMIC DEGREES:

University of Michigan, Ann Arbor, MI, USA.
Ph.D., Aerospace Engineering, May 1995.
Area of concentration: Computational Fluid Dynamics.

University of Michigan, Ann Arbor, MI, USA.
M.Sc.E., Aerospace Engineering, December 1990.

Istanbul Technical University, Istanbul, Turkey.
B.Sc., Aeronautical Engineering, 1987.
Graduated with **ranked 1st** among 100 students.
(GPA: 85.64/100, Excellent).

TEACHING EXPERIENCE:
Istanbul Technical University, Istanbul, Turkey:

Undergraduate Level: Introduction to Scientific Computing, Programming in Fortran 77, Programming in Fortran 90, Numerical Analysis, Engineering Mechanics: Static, Engineering Mechanics: Dynamics, Aerodynamics, Programming in C, Measurement Techniques.

Graduate Level: Gas Kinetic Theory, Computational Fluid Dynamics, Viscous Flows.

Marmara University, Istanbul, Turkey:
Undergraduate Level: Numerical Analysis, Engineering Mechanics: Static.
Graduate Level: Advanced Fluid Dynamics.

Airforce Academy, Istanbul, Turkey:
Undergraduate Level: Programming in C, Modeling and Computer Simulation.

RESEARCH INTERESTS:
Bio-Fluid Flows
- Computational modeling of bio-fluid mechanics of white blood cells:
  - Cell Entry into Micropipette,
  - Modeling of Cell Adhesion,
- Modeling Cell Biology in Complex Flow Fields.
- Simulation of Kawasaki Disease with FLUENT.

Nonlinear Methods and its Applications in Physiology and Medicine
- Using Approximate Entropy, Sample Entropy and Multiscale Entropy
- Fractal Dimension, Detrended Fluctuation Analysis (DFA) and Multifractal Analysis
- Pattern Recognition: Wavelet Analysis of ECG/EEG Signals
- Identification of patients having Long QT syndrome

MEMS Devices
- Gas Bubble Filter Design and Analysis in MEMS Devices.

Material Processing - Numerical Simulations
- Thermocapillary motion, stability and interaction of drops and bubbles (*containerless glass production in microgravity*)
- Numerical tracking of moving fronts and boundaries
- Effect of Variable Viscosity with Temperature on the terminal velocity of a fluid particle under thermocapillary motion in migrogravity environment.

Code Development
- Development of an accurate Finite Volume/Front Tracking Method to solve fluid dynamics problems in and around complex geometries.

Methods of numerical analysis in Computational Fluid Dynamics and Heat/Mass Transfer
- Finite volume method in computational fluid dynamics

- Front tracking/Finite difference method for tracking of moving fronts and boundaries
- Numerical Solution of Unsteady Incompressible Flows with Applications to Multiphase Flows

High Performance Computing
- Parallelization of CFD codes on parallel computers by MPI (IBM SP2, SUN, SGI).

PROFESSIONAL EXPERIENCE:

Assistant Professor, May 1995 – Present.
Department of Aerospace Engineering,
Istanbul Technical University, Istanbul, Turkey.

Visiting Professor, September 2004 - September 2006.
University of Arkansas for Medical Sciences
Department of Pediatrics, Cardiology Section,
Arkansas Children's Hospital, Little Rock, Arkansas, USA.

Turkish Petrolium Inc., Ankara, Turkey.
Consultant to the General Manager in the area of Research, Information Technology and Education, Sept 2003 – Sept 2004.

Member of the Science Comittee for Modern Methods in Science Conference, 16-18 Nov 2005, Kocaeli, Turkey.

Visiting Professor, Department of Pediatric Cardiology, Cincinnati Children`s Hospital Medical Center, University of Cincinnati, Jan 10th-Jan 25th, 2004.

Istanbul Transportation Inc., Istanbul, Turkey.
Technical Consultant, December 2000 – October 2001.

Visiting Professor, Department of Mechanical Engineering, University of Michigan, June 1st-September 15th, 1999.

Member of the Department Executive Committee, 1997-2000

Member of the Department Committee, 1997-2000.

Member of the Steering Comitte for 2nd International Advanced Technology Conference, 8-10 March 1999, Istanbul, Turkey.

Member of the Advisory Committee for 2nd International Transportation Conference, 1-4 October 1998, Istanbul, Turkey.

University of Michigan, Ann Arbor, MI.

Research Assistant, 1992-1995. Applied efficient computational techniques to solve Navier-Stokes equations and to study multi-fluid flow in zero gravity.

University of Michigan, Ann Arbor, MI.
Research, 1991. Wrote Navier-Stokes solver for hypersonic flow around cone, grid generation around a NACA airfoil, Euler solver for flow about NACA airfoil.

University of Michigan, Ann Arbor, MI.
Research, 1990. Stability analysis of Improved Flux Vector Splitting method in Finite Volume Computation.

PUBLICATIONS AND PRESENTATIONS:

Thesis:

Nas, S., 1995, *"Computational Investigation of Thermocapillary Migration of Bubbles and Drops in Zero Gravity,"* Ph.D. thesis, Department of Aerospace, University of Michigan Ann Arbor, MI, 48109 USA.

Journal Articles:

1. **S. Nas** and G. Tryggvason, *"Pattern Formation of Drops in Thermocapillary Migration"*. International Journal of Heat and Mass Transfer 49 (13-14), pp. 2265-2276, Feb 2006.

2. C. F. Delale, **S. Nas** and G. Tryggvason, *"Direct Numerical Simulation of Shock Propagation in Bubbly Liquids,"* Physics of Fluid, 17, Dec 2005.

3. Sanbe A, James J, Tuzcu V, **Nas S**, Martin L, Gulick J, Osinska H, Sakthivel S, Klevitsky R, Ginsburg KS, Bers DM, Zinman B, Lakatta EG, Robbins J. *"A Transgenic Rabbit Model for Human Troponin I-based Hypertrophic Cardiomyopathy"*. Circulation 111(18):2330-2338, May 10 2005. Times Cited: 3

4. **S. Nas** and G. Tryggvason, *"Thermocapillary Interaction of Two Bubbles or Drops,"* International Journal of Multiphase Flow 29 (7): 1117-1135, July 2003. Times Cited: 1

5. G. Tryggvason, B. Bunner, A. Esmaeeli, D. Juric, N. Al-Rawahi, W. Tauber, J. Han, **S. Nas**, and Y.-J. Jan, *"A Front Tracking Method for the Computations of Multiphase Flow,"* Journal of Computational Physics 169 (2): 708-759, May 20 2001. Times Cited: **109**

6. Tuzcu, V., **Nas, S.**, Borklu, T., Ugur, A. *"Decrease in R-R Interval Entropy Prior to the Onset of Atrial Fibrillation,"* Europace (2006), 8, pp. 398-402.

Submitted Journal Articles:

Selman Nas and Volkan Tuzcu, *"Dynamic Time Warping as a Novel Tool in Discrimination of Supraventricular Tachycardia from Ventricular Tachycardia"*. Submitted to Journal of Cardiovascular Electrophysiology.

Selman Nas, Ahmet Ugur and Volkan Tuzcu, *"Heart Rhythm Complexity Changes Following Cardiac Transplantation in Children"*. Submitted to American Journal of Cardiology.

Ahmet Ugur, **Selman Nas** and Volkan Tuzcu, *"Effect of Beta-blockers on the Heart Rhythm Complexity in Children"*. Submitted to Journal of Cardiovascular Pharmacology.

Book Chapter:
G. Tryggvason, D. Juric, J. Che, M.R.H. Nobari, and **S. Nas**, *"Computations of Multiphase Flows by a Finite Difference/Front Tracking Method. III Variable Surface Tension and Phase Change."* In: 29th Computational Fluid Dynamics. Lecture Series 1998-03. Von Karman Institute for Fluid Dynamics.

Submitted Conference Papers:

Accepted Conference Abstract:

C. F. Delale, G. Tryggvason and **S. Nas**, *"Cylindrical Bubble Dynamics: Exact and DNS Results,"* IUTAM Symposium on Recent Advances in Multiphase Flows: Numerical and Experimental, June 11-14 2007, Istanbul, Turkey.

Accepted Conference Papers:

Conference Papers and Presentations:
1. Volkan Tuzcu and **Selman Nas**, Hakan Erdogan, Li Zhang, Michael Vincent, D. Woodward Benson, *"Identification of Genotype-Specific Repolarization Patterns in Congenital Long-QT Syndrome Using Dynamic Time Warping Analysis"*. American Heart Association Scientific Session, November 13-16, 2005, Dallas, Texas. CIRCULATION 112 (17): U457-U457 1942 Suppl. 2 OCT 25 2005.

2. Nurullah Arslan, Volkan Tuzcu, **Selman Nas**, Ayşe Durukan, *"CFD Modelling of Blood Flow Inside Human Left Coronary Artery Bifurcation with Aneurysms"*. 3rd European Medical and Biological Engineering Conference, Nov 20-25, 2005, Prague (Czech Republic).

3. Volkan Tuzcu and **Selman Nas**, *"Sample Entropy Analysis of Heart Rhythm Following Cardiac Transplantation"*. IEEE International Conference on Systems, Man, and Cybernetics, Oct 10-12, 2005, Hawaii, USA.

4. Volkan Tuzcu and **Selman Nas**, *"Dynamic Time Warping As a Novel Tool in Pattern Recognition of ECG Changes in Heart Rhythm Disturbances"*. IEEE

International Conference on Systems, Man, and Cybernetics, Oct 10-12, 2005, Hawaii, USA.

5. Tuzcu, V., **Nas, S.**, Borklu, T., Ugur, A. *"Decrease in R-R Interval Entropy Prior to the Onset of Atrial Fibrillation,"* Journal of American College of Cardiology 45(3):333A-333A Suppl. A, Feb 1st 2005.

6. C. F. Delale, **S. Nas** and G. Tryggvason, *"Numerical Simulation of Shock Propagation in Bubbly Liquids by the Front Tracking Method,"* Proceeding of Fluid Mechanics and its Applications of IUTAM Conference, Oct 4-7 2004, Chicago (Invited).

7. M. Muradoglu, M.B. Soydan and **S. Nas**, "*Computational Modeling of Bio-Fluid Mechanics of White Blood Cells*," IUTAM Symposium on Computational Approaches to Dispersed Multiphase Flows, Argonne National Laboratory, Argonne, IL, USA, (2004) (To be published by Kluwer Academic Publisher).

8. Vatandas, E., Ozkol I., and **Nas, S.**, *"Implementation of Genetic Algorithm on The Design of a Transonic Wing by Using Parallel Processing,"* ICSP, International Conference on Signal Processing, December 15-17, 2004, Istanbul, Turkey.

9. F. Çenesiz, H. Saka, **S. Nas**, C. Özşamlı, *"A Method to Guarantee the Continuity of GPS in Urban Envirınments,"* International Symposium on Remote Sensing and Integrated Technologies, 20-22 October 1999, Istanbul, Turkey.

10. **S. Nas**, T. Kotil, G. Yücesan, K. Yıllıkçı and Z. Mecitoğlu, *"Structural Analysis of RTE-2000 Tramcar,"* Second International Advanced Technologies Symposium, Marmara University, March 1999, Istanbul, Turkey.

11. H. Saka, **S. Nas** and G. Yücesan, *"Development of an AVL system by using GPS,"* II. International Transportation Conference, Editors: İ. Gök and R. Yetim, pp: 169-172, 1-4 October 1998, Istanbul.

12. **S. Nas** and Ö. Yıldız,*"Istanbul Traffic Signalization Project,"* Traffic and Signalization Conference, Atatürk Kültür Merkezi, Istanbul, 22-23 March 1997, Istanbul, Turkey.

13. G. Tryggvason, D. Juric, **S. Nas** and S. Mortazavi, *"Computations of Drop Collision and Coalescence,"* 3rd Microgravity Fluid Physics Conference, Cleveland OH, June 13-15, 1996. NASA Conference Publication 3338, pp. 535-540, 1996.

14. O. Borat, **S. Nas** and A. Güllüoğlu, *"Fire Gases and Toxic Hazard Assessment,"* The First International Conference on Fire and Safety, pp. 60-67, 20-21 May 1996, Istanbul, Turkey.

15. M. Kantarcı, O. Borat, A. Güllüoğlu and **S. Nas**, *"Major Factors Influencing Fire Growth,"* The First International Conference on Fire and Safety, pp. 50-59, 20-21 May 1996, Istanbul, Turkey.

16. G. Tryggvason, A. Esmaeeli, D. Juric, S. Mortazavi and **S. Nas** *"A front tracking method for direct simulations of multi-phase flows,"* Boundary Elements XVII, edited by C.A. Brebbia, S. Kim, T. A. Osswald and H. Power, Comp. Mech. Pub., Southampton, pp. 653-660 (1995). Invited mini-symposium presentation. 17th Conference on Boundary Elements, BEM-17, Madison, WI, July 17-19, 1995.

17. G. Tryggvason, D. Juric, **S. Nas** and M.H.R. Nobari, *"Computations of Drop Collision and Coalescence,"* Second Microgravity Fluid Dynamic Conference, NASA Conference Publication 3276, Cleveland, Ohio, June 21-23, 1994, 135-140.

18. **S. Nas** and G. Tryggvason, *"Computational Investigation of the Thermal Migration of Bubbles and Drops,"* AMD 174/FED 175 Fluid Mechanics Phenomena in Microgravity, Ed. Siginer, Thompson, and Trefethen. ASME Winter Annual Meeting, 1993, pp: 71-83.

19. G. Tryggvason and **S. Nas**, *"Computational Investigation of the Thermal Migration of Bubbles and Drops".* Bulletine of the American Physical Society, Vol. 38, No. 12, November 1993. APS 46th Annual Meeting, Division of Fluid Dynamics, Albuquerque, New Mexico.

20. **S. Nas** and G. Tryggvason, *"Computational Investigation of the Thermal Migration of Bubbles and Drops".* Bulletin of the American Physical Society, Vol. 37, No. 8, 1992. APS 45th Annual Meeting, Division of Fluid Dynamics, Tallahassee, Florida.

21. R. Kaykayoglu, **S. Nas** and A. Altinisik, *"Computational simulation of vortex-elliptic leading edge interaction by point vortex method,"* Fifth National Mechanics Conference, Bursa, Uludag, September 1987, Turkey (During undergraduate study).

Abstracts:

Tuzcu, V., **Nas, S.**, Borklu, T., Ugur, A. *"Decrease in R-R Interval Entropy Prior to the Onset of Atrial Fibrillation,"* Journal of American College of Cardiology 45(3):333A-333A Suppl. A, Feb 1st 2005.

Poster Presentations:

Tuzcu, V., **Nas, S.**, Borklu, T., Ugur, A. *"Decrease in R-R Interval Entropy Prior to the Onset of Atrial Fibrillation,"* American College of Cardiology, Annual Scientific Session 2005, May 6-9, Orlando, Florida, USA.

H. Saka, **S. Nas**, F. Çenesiz, G. Yücesan, *"Accurate Position Calculation of A Moving Vehicle by Inverse Differential GPS,"* International Symposium on Remote Sensing and Integrated Technologies, 20-22 October 1999, Istanbul, Turkey.

Seminars:

1. *"Nonlinear Dynamics Applications in Cardiology,"* Distinguished Speaker in Joint College Colloquium Series, University of Arkansas at Little Rock, September 23rd, 2005. Little Rock, AR, USA.

2. *"Selected Research Topics in Cardiology,"* Arkansas Children Hospital, University of Arkansas for Medical Sciences, December 6, 2004. Little Rock, AR, USA.

3. *"Analysis of ECG signals by nonlinear methods,"* Istanbul Technical University, Feb 10th, 2004, Istanbul, Turkey.

4. *"Parallel Computation of Thermocapillary Bubble and Drop Migration in Zero Gravity,"* Parallel CFD Workshop, Experiences in Implementation, June 16-18 1999, Istanbul, Turkey.

5. *"Internet and its area of usage,"* Istanbul Technical University, November 1995.

6. *"Thermocapillary Migration of Bubbles and Drops in Zero Gravity,"* Istanbul Technical University, 22 May 1995.

7. *"Thermocapillary Migration of Bubbles and Drops in Zero Gravity,"* The University of Michigan, November 15, 1992.

Technical Reports:

1. Zahit Mecitoğlu, Güven Yücesan, Temel Kotil and **Selman Nas**, *"Development of a Computerized Measurement System for the Simulation of Structural Behavior of RTE-2000 Tramcar,"* Technical Report, Istanbul Technical University, Department of Aerospace Engineering, 1999.

2. Temel Kotil, Zahit Mecitoğlu, Güven Yücesan and **Selman Nas**, *"A Mechanical Measurement System for the RTE-2000 Tramcar,"* Technical Report, Istanbul Technical University, Department of Aerospace Engineering, April 1999.

3. Temel Kotil, Zahit Mecitoğlu, Güven Yücesan and **Selman Nas**, *"Identification of Dynamic Characteristics of the RTE-2000 Tramcar by ANSYS software,"* Technical Report, Istanbul Technical University, Department of Aerospace Engineering, April 2000.

COMPUTER EXPERIENCE AND KNOWLEDGE:

Programming languages: C, Fortran 77/90, Visual Basic 6.0, SQL

Database Systems: Oracle, MS SQL Server, Microsoft Access
Networking: Experience on setting up Local Area Network and Wide Area Networks. Established Local Area Network (LAN) and Wide Area Network(WAN) systems. Experience with MS Windows NT-PLC system integration. Client server application development with database systems.
Computer Platforms: IBM PC Compatibles, Macintosh, Sun Microsystems, HP Unix Workstations, IBM RS6000, DEC, IBM SP2 Parallel Computer with MPI, SGI Parallel Computer with MPI, SUN Parallel Computer with MPI, Convex, CRAY and IBM 3090.
Operating Systems: Windows XP Server/Pro, Windows NT Server/Workstation, Windows 95/98, UNIX, Linux, DOS, CMS. Have given Windows NT 4.0 Server Administrative courses. I have taken SUN Solaris and IBM AIX System Administration Courses.

OTHER RELEVANT ACTIVITIES:

- I was responsible for three years about the network design and administration of the computer laboratories in the Department of Aerospace Engineering in Istanbul Technical University.
- I worked on the project called "*Early Warning and Automatic Dispatching System*" supported by Greater Municipality of Istanbul, Turkey. (Sept. 1995 - Feb. 1996)
- I worked on the project called "*Demand Tracking System*" supported by Greater Municipality of Istanbul, Turkey. (Feb. 1996 - Oct. 1996)
- I worked on the project called "*Computerized real time tracking of mobile vehicles on field using mobile GPS systems*".
- I worked on the experimental setup and data collection of a newly-built tramcar for the Greater Municipality of Istanbul, Turkey.
- I have done different types of flow analysis by using ANSYS/FLOTRAN.
- I have parallel programming experience with MPI on IBM SP2, SGI and SUN systems and Personal Computers with Linux. I also have experience with PVM on IBM RS6000 clusters.
- I have knowledge of X window systems, and computer visualization with AVS. My software knowledge includes Matlab, Maple, Mathematica, Latex, and Microsoft Office etc.
- I have taken Siemens S7/300 and S7/400 PLC courses.

MEMBERSHIP IN PROFESSIONAL SOCIETIES:

HRS – Heart Rhythm Society

RESEARCH GRANTS:

Title: Code Development for the Aerodynamic Analysis of Bullets and Missiles
Supported by: State Planning Organization, Turkish Government.
Time Period: Jan 1st 1996 – Jan 1st 2000

Grant Awarded: $60,000.00

HONORS AND AWARDS:

- 1983-1987 Turkish Education Foundation Fellowship for a B.Sc. degree in Aerospace Engineering.
- 1983-1987 Turkish Petroleum Foundation Fellowship for a B.Sc. degree in Aerospace Engineering.
- 1986-1987 Istanbul Technical University, the most successful Aerospace Engineering student award (ranked 1st among 100 students).
- 1988-1990 Turkish Ministry of Education and Youth Scholarship for M.Sc.E degree in Aerospace Engineering.
- 1990-1995 Turkish Ministry of Education and Youth Scholarship for Ph.D. degree in Aerospace Engineering.