

## CURRICULUM VITAE

**Erhan Turan, PhD**

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Department of Computer Science, Computational Science, ETH Zürich, 8092  
Zürich – Switzerland

### Education

- Ph.D. , Mechanical Engineering, Bogazici University, 6/2010  
Thesis Title: A Framework for the Analysis of Coupled-Physics Models using Adaptive Multi-Level Techniques
- B.S., Mechanical Engineering, Bogazici University, 2/2004

### Skills and Interests

- Computational Fluid Dynamics, Incompressible flow, Aerodynamics, Finite Element & Finite Volume Methods
- Scientific Computing, Parallel Processing, Solution of Nonlinear Equations, Multigrid
- Multiphysics: Nonisothermal Flows, Multiphase Flows , Fluid Structure Interaction, Finite Elements

### Research Experience

- Post-doctoral Researcher by Prof. Peter Arbenz (8/2010 – to date )  
Department of Computer Science, ETH, Zurich - Switzerland  
Parallel Preconditioning of large linear systems arising from Micro Finite Element Analysis
- Visiting Researcher by Prof. A. C. Benim (10/2008 - 4/2009)  
Dusseldorf University of Applied Sciences, Dusseldorf - Germany  
Multiphase Flow Analysis; Opensource CFD using OpenFOAM, Code Saturne, Salome, Paraview

### Teaching Experience

- Teaching Assistant (9/2004 - 8/2010)  
Department of Mechanical Engineering, Bogazici University - Turkey  
Assistantship on Energy Science and Mechanics related courses in Undergraduate and Graduate levels.

### Industrial Experience

- Intern (2/2003 – 7/2003)  
Robert BOSCH GmbH, Stuttgart – Germany  
Automation of Preventative Measures of Production Stations of Diesel Injector  
Optimization of Screwing Processes of Assembly Stations

### Publications

- **Turan E**, " A Framework for the Analysis of Coupled-Physics Models using Adaptive Multi-Level Techniques ", PhD Thesis, Boğaziçi University (2010) – [Boğaziçi University Library listing](#)
- **Turan E**, Ecker A, "Analysis of a Bimetallic Slab in Non-isothermal Flow", Journal of Mechanical Engineering Science (2010) <http://dx.doi.org/10.1243/09544062JMES2135>
- **Turan E**, Saygin H, Basol A, Ecker A, "Resolving Non-Symmetry in Flows via Subdomain Shifts" , Mathematical Modelling and Analysis, 15:3, 349-370 (2010). <http://dx.doi.org/10.3846/1392-6292.2010.15.349-370>
- Assmann, A. C. Benim, A. Nahavandi, **E. Turan**, D. Schubert, E. Gams, P. Feindt, "Aortic Blood Flow Characteristics of Different Extracorporeal Circulation Techniques During Cardiac Surgery - A Computational Fluid Dynamics Approach", Medical Physics and Biomedical Engineering World Congress 2009, September 7-12, Munich, Germany, IFMBE Proceedings 25/IV, 1604-1607 (2009)  
[http://dx.doi.org/10.1007/978-3-642-03882-2\\_425](http://dx.doi.org/10.1007/978-3-642-03882-2_425)
- Ilicak M, Ecker A and **Turan E**, "Operator Splitting Techniques for the Numerical Analysis of Natural Convection Heat Transfer", International Journal of Computer Mathematics (SCIE), 84:6, 783-793 (2007)  
<http://dx.doi.org/10.1080/00207160701458278>

## Conferences

- **Turan E**, Arbenz P, "Large Scale Micro Finite Element Analysis of 3D Poroelasticity", LSSC 2011 - Bulgaria
- **Turan E**, Eceder A, "Set Reduction in Nonlinear Equations", 11<sup>th</sup> Copper Mountain Conference 2010 - United States
- **Turan E**, Eceder A., Analysis of a Bimetallic Strip in Non-isothermal Flow Using Adaptive Multilevel Techniques, ESCO 2008 - Czech Republic
- Saygin H, Eceder A, **Turan E**, Numerical Investigation of Boundary-Motion-Induced Flow, - ICCAM 2006 - Belgium
- Basol A, Eceder A, **Turan E**, Kaptan Y, Aerodynamics Optimization of a Paraglider Wing using Domain Decomposition Analysis, - ICCAM 2006 - Belgium
- **Turan E**, Eceder A, Gunbegi Z, Analysis of Premixed Combustion with Detailed Chemistry Using Adaptive Multigrid Method, - 8th EMG Conference 2005 - The Netherlands

## Awards/Achievements

- Ph.D. on Computational Fluid Dynamics – 2010
- TUBITAK<sup>1</sup> BIDEB - International Researcher Program( R2214) Scholar - 2008/2009
- Organizing Committee of [ISPDC 2010](#) Conference - 2010
- Demona: Decomposition Enhanced Mechanics Optimized Numerical Analysis – Solver developed during PhD.  
<http://www.mechran.com/demona>

## Computing

- Linux & Windows, MS Office
- Fortran (+ OpenMP), C++, Trilinos
- Ansys, CFX, Tecplot
- Matlab, Scilab, Octave
- OpenFOAM, Salome, Paraview

## Works in Progress

- ParFe: Extension of a scalable parallel solver for the analysis of poroelastic model to simulate human bone. Programming with C++ and Trilinos.
- Joint work with a colleague to develop a finite element framework for engineering problems <http://www.caerin.com>
- **Turan E**, Arbenz P, "Large Scale Micro Finite Element Analysis of 3D Human Bone Poroelasticity", In preparation
- **Turan E**, Eceder A, "Analysis of Set Reduction in Nonlinear Equations", In preparation
- **Turan E**, Benim, AC, Eceder A, " Artificial Compressibility Analysis of Two-phase Flows Using Newton-Krylov Techniques ", In preparation

## Languages

- English, German, Turkish (Native)

## Memberships

- AIAA : American Institute of Aeronautics and Astronautics
- AMS: American Mathematical Society
- Euromech: European Mechanics Society
- SAE: Society of Automobile Engineers
- SIAM: Society for Industrial and Applied Mathematics

## Personal

- Birthday: December 24, 1980
- Nationality: Turkish

**References** are available upon request.

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<sup>1</sup> TUBITAK: The Scientific & Technological Research Council of Turkey