

# KAVEH HOSSEINI

432 College Ave., Apt. C, Palo Alto CA 94306  
Home: (650) 566-9488 - Office: (650) 723-9564 - Cell: (650) 353-1015  
E-mail: [hosseini@stanford.edu](mailto:hosseini@stanford.edu)  
<http://aero-comlab.stanford.edu/hosseini/>

## EDUCATION

STANFORD UNIVERSITY, Stanford, CA (09/97-06/05).

- **Ph.D.** in Aeronautical and Astronautical Engineering. Thesis topic: Practical Implementation of Robust Preconditioners for Optimized Multistage Flow Solvers (06/05). **GPA 3.85/4.**
- **M.S.** in Aeronautical and Astronautical Engineering (06/98).

INSTITUT D'ADMINISTRATION DES ENTREPRISES (IAE), Toulouse, France (96-97).

- **Business Administration Degree** of "DESS-CAAE", a condensed type of MBA (06/97).

ECOLE NATIONALE SUPERIEURE DE MECANIQUE ET D'AEROTECHNIQUE (ENSMA), Poitiers, France (93-96)

- Mechanical and Aeronautical **Engineering Degree** of "Diplôme d'Ingénieur" (06/96)

CLASSES PREPARATOIRES PIERRE DE FERMAT (Mathématiques Supérieures and Mathématiques Spéciales), Toulouse, France (90-93).

- Post-High School preparatory courses for the competitive entrance exam to the French Engineering Colleges.

## WORK EXPERIENCE

\* STANFORD UNIVERSITY, Dept. of Aeronautics and Astronautics, (06/98-06/05)

- **Research Assistant** in **CFD** (Computational Fluid Dynamics) under the direction of Prof. Juan J. Alonso and Antony Jameson as part of the DoE (Department of Energy) **ASC** project (Advanced Simulation & Computing). Massively parallel simulation of the flow through a complete jet engine (6/99-06/05).
  - Implemented Local Matrix Preconditioning methods for Euler and Navier-Stokes flow solvers.
  - Accelerated convergence for explicit time-marching Runge-Kutta multistage multigrid schemes.
  - Improved accuracy for low Mach numbers.
  - Achieved robustness by combining Low-speed preconditioners with Block-Jacobi preconditioners.
  - Optimized multistage coefficients for maximum convergence.
  - Investigated suitability of advanced techniques such as semi-coarsening for the stiffness problem due to high aspect ratio cells.

- **Teaching Assistant** for graduate level classes
  - **Numerical Methods in Fluid Dynamics** (AA214A),
  - **Aircraft Propulsion** (AA283),
  - **Rocket Propulsion** (AA280).

Taught class size of 30-40 students. Awarded **Outstanding Teaching Assistant Award** by the American Institute of Aeronautics and Astronautics (AIAA) (9/98-6/99).

- **Research Assistant in CFD**: Studied an explicit implementation of the Spalart-Allmaras turbulence model for implementation in the 2D explicit multistage multigrid flow solver FLO103 (Summer 98).

- **Independent Research** in Rocket Propulsion. Designed a Virtual Instrument controller using LabVIEW for a **Hybrid Rocket** experimental test-bed. Successfully automated the test-firing sequence of the rocket engine (Spring 98).

\* EXPERIENCES IN THE FIELD OF **ROTARY ENGINES**. (95-97):

- **Project Management Intern** at ECAM (Etudes et Concepts Aéronautiques et Mécaniques), Toulouse, France. Rotary Engine for helicopters and general aviation (Summer 97).

- **Laboratory Researcher** at ENSMA, Poitiers, France. Designed a rotary engine combustion chamber and conducted combustion experiments involving laser-Doppler velocimetry and interferometric photography of flame fronts (Spring 96).

- **Engineer Intern** at Epsilon Ingénierie, Toulouse, France. Implemented a rotary engine simulation program. Created a joint-venture between industry and academia for manufacturing and testing a combustion chamber scale model (Summer 95).

## HONORS AND AWARDS

- American Institute of Aeronautics and Astronautics (AIAA) Outstanding Teaching Assistant of the year 98-99.

- Top 5% of France's Ecole Nationale Supérieure d'Ingénieurs (ENSI) competition of the year 92-93.

## PUBLICATIONS

- Conference:**
- “Optimization of Multistage Coefficients for Explicit Multigrid Flow Solvers” (with J. J. Alonso). *Proceedings of the 16<sup>th</sup> AIAA Computational Fluid Dynamics Conference*, Orlando, FL, June 2003. AIAA Paper 2003-3705.
  - “Practical Implementation and Improvement of Preconditioning Methods for Explicit Multistage Flow Solvers” (with J. J. Alonso). *Proceedings of the 42<sup>nd</sup> Aerospace Sciences Meeting & Exhibit*, Reno, NV, January 2004, AIAA Paper 2004-0763.
  - “Enhancement of Adjoint Design Methods via Optimization of Adjoint Parameters” (with S. Kim and A. Jameson), *Proceedings of the 43<sup>rd</sup> Aerospace Sciences Meeting & Exhibit*, Reno, NV, January 2005, AIAA Paper 2004-0448.
- Journal:** “Hybrid Numerical/Analytical Optimization Approach for Fast Preconditioned Navier-Stokes Flow Solvers” (with J. J. Alonso), in preparation for submission to the AIAA Journal.
- Thesis:** “Practical Implementation of Robust Preconditioners for Optimized Multistage Flow Solvers”, Stanford University, June 2005.

## SKILLS AND INTERESTS

- Languages:**
- Fluent in English, French and Persian.
  - Proficient in Spanish.
  - Basic knowledge of Polish, German and Arabic.
- Computer:**
- Operating Environments: Unix (Linux, SGI, SUN,...), Macintosh and Windows;
  - Softwares: Microsoft Office, OpenOffice, LaTeX, MATLAB, Mathematica, PV3, Fluent, SNOPT, LabVIEW, AutoCAD, Tecplot, Photoshop,...
  - Languages: Fortran and C, also familiar with Ada and Pascal.
  - Parallel programming: MPI and OpenMP.
- Membership:**
- American Institute of Aeronautics and Astronautics (AIAA)
  - Aircraft Owners and Pilots Association (AOPA)
  - Palo Alto Flying Club (PAFC) and Shoreline Flying Club at Palo Alto Airport.
  - Persian Student Association (PSA) at Stanford University. Current active member and former elected Ombudsperson.
- Interests:** Passion for Aerospace and Automobiles. Private Pilot (US and French licenses). Certified SCUBA diver (PADI Open Water Certification). Rock band leader. Model aircraft builder.

## REFERENCES

**Juan J. Alonso**, Assistant Professor  
Durand Building, Room 365  
Department of Aeronautics & Astronautics  
Stanford University, Stanford, CA 94305  
Phone: (650) 723-9954  
Fax : (650) 725-3377  
Email: [jjalonso@stanford.edu](mailto:jjalonso@stanford.edu)

**Antony Jameson**, Thomas V. Jones Professor of Engineering  
Durand Building, Room 381  
Department of Aeronautics & Astronautics  
Stanford University  
Stanford, CA 94305  
Phone: (650) 725-6208  
Fax : (650) 723-1685  
Email: [jameson@baboon.stanford.edu](mailto:jameson@baboon.stanford.edu)

**Brian Cantwell**, Edward C. Wells Professor of Engineering and Chairman of the Department of  
Aeronautics & Astronautics  
Durand Building, Room 379  
Department of Aeronautics & Astronautics  
Stanford University, Stanford, CA 94305  
Phone: (650) 723-4825  
Fax : (650) 723-3018  
Email: [cantwell@stanford.edu](mailto:cantwell@stanford.edu)

**Thomas Pulliam**, Senior Research Scientist  
CODE INA  
NASA Ames Research Center  
Moffett Field, CA 94035  
Phone: (650) 604-6417  
Email: [tpulliam@mail.arc.nasa.gov](mailto:tpulliam@mail.arc.nasa.gov)

**Paul Durbin**, Research Professor  
Building 530, 440 Escondido Mall  
Department of Mechanical Engineering  
Stanford University, Stanford, CA 94305  
Phone: (650) 723-9311  
Fax : (650) 725-3525  
Email: [durbin@vk.stanford.edu](mailto:durbin@vk.stanford.edu)