MILOŠ ILAK

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EDUCATION

Princeton University, Princeton, NJ *September 2004-present*
Department of Mechanical and Aerospace Engineering
- Ph.D. degree expected August 2009, M.A. November 2006, advisor: Prof. Clarence W. Rowley.
- Research topic: a systematic approach to modeling and control of transitional and turbulent channel flow through extraction of low-order models from large-scale simulations. Other interests include dynamical systems, control, numerical methods and parallel computation, flight dynamics, aircraft design.
- A list of journal and conference papers and talks is available at www.princeton.edu/∼milak (also see other side).

Swarthmore College, Swarthmore, PA *September 2000-May 2004*
Bachelor of Science, Engineering, Honors Program
Bachelor of Arts, Physics, Honors Program
- The McCabe Engineering Award, awarded to the outstanding graduating senior, May 2004.
- The John W. Perdue Memorial Prize, awarded to the outstanding engineering junior, Fall 2002.

RESEARCH EXPERIENCE

Royal Institute of Technology, Stockholm, Sweden *September-December 2007*
Department of Mechanics, *Visiting Assistant in Research*
- Evaluated a new method for model reduction of nonlinear systems, advisor: Prof. Dan Henningson.

Swarthmore College, Swarthmore, PA *Spring 2004*
Department of Engineering, *Senior Design Project*
- Designed, built and tested a fully instrumented demonstration Stirling engine with real-time performance monitoring for use in thermodynamics laboratory exercises.

California Institute of Technology, Pasadena, CA *June-August 2003*
Laboratory for Spacecraft and Mission Design, *SURF Program Research Student*
- Developed an engineering model for spacecraft attitude determination and control.
- Improved a MATLAB tool for probabilistic determination of design margins for spacecraft systems.

Massachusetts Institute of Technology, Cambridge, MA *June-August 2002*
Laboratory for Electromagnetic and Electronic Systems, *Research Intern*
- Implemented a genetic algorithm in MATLAB to design an optical filter used in a thermophotovoltaic generator intended as an alternative energy source in automotive applications.

TEACHING EXPERIENCE

Princeton University, Princeton, NJ *February 2006 - May 2007*
Dept. of Mechanical and Aerospace Engineering, *Assistant in Instruction*
- Microprocessors for Measurement and Control, with Prof. M.G. Littman, Spring 2006.
  - Assisted students with laboratory exercises and independent course projects.
- Aircraft Flight Dynamics, with Prof. R.F. Stengel, Fall 2006.
  - Assisted students with assignments, performed grading duties and organized tutorial sessions.
- Aircraft Design – Hypersonic Aircraft, with Dr. K.G. Bowcutt, Spring 2007.
  - Assisted student teams with conceptual design of hypersonic aircraft and supporting computer simulations.
  - Engineering Council Teaching Award and Crocco Award for Teaching Excellence received for the class.

OTHER

- **Computer Skills**
  - Developed complex tools for computational fluid dynamics, including parallelization, visualization, version control and code testing.
  - Proficient in MATLAB, FORTRAN (including F03), Python, MPI; beginner C++; familiar with multi-language programming (wrapping).
  - Other: LaTeX, UNIX/LINUX, OS X, MS Office, Keynote, Tecplot, basic familiarity with Mathematica.
- **Academic and professional affiliations: SIAM, APS, AIAA, Tau Beta Pi, Sigma Xi**
- **Fundamentals of Engineering:** passed FE exam in Delaware, April 2004
- **Languages:** Serbo-Croat (native), Bulgarian (fluent), Russian (intermediate), German (beginner)

PUBLICATIONS

Links to all URL's can also be found at http://www.princeton.edu/∼milak/Publications.html

Journal articles:

- Ilak, M. and Rowley, C.W., "Modeling of transitional channel flow using balanced proper orthogonal decomposition", *Physics of Fluids* **20** (034103), March 2008,
  URL: http://weblamp.princeton.edu/cwrowley/getpaper.php?id=103
- Celanovic, I., O'Sullivan, F., Ilak, M., Kassakian, J., and Perreault, D., "Design and optimization of one-dimensional photonic crystals for thermophotovoltaic applications", *Opt. Lett. 29, 863* (2004)

Conference Proceedings:

- Ilak, M. and Rowley, C.W., "Feedback control of transitional channel flow using balanced proper orthogonal decomposition", *AIAA Paper 2008-4230, 5th AIAA Theoretical Fluid Mechanics Conference*, June 2008,
  URL: http://www.princeton.edu/ milak/papers/Ilak-Rowley-AIAA-2008-4230-290.pdf
- Ilak, M. and Rowley, C.W., "Reduced-order models of channel flow using traveling POD and balanced POD", *AIAA Paper 2006-3194, 3rd AIAA Flow Control Conference*, June 2006,
  URL: http://weblamp.princeton.edu/cwrowley/getpaper.php?id=79
- Rowley, C.W. and Ilak, M., "Reduced-order models of linearized channel flow using balanced truncation", *Proceedings of the 14th Mediterranean Conference on Control and Automation*, June 2006,
  URL: http://weblamp.princeton.edu/cwrowley/getpaper.php?id=82

Other Conference and Meeting Presentations:

- Ilak, M. and Rowley, C.W., "Reduced-Order Estimator-Based Feedback Control of Transitional Channel Flow", 61st American Physical Society Division of Fluid Mechanics Meeting, San Antonio, Texas, November 2008
- Ilak, M. and Rowley, C.W., "Feedback control of transitional channel flow using balanced proper orthogonal decomposition", 2008 Thousand Islands Fluid Dynamics Meeting, Gananoque, Ontario, Canada, April 2008
- Ilak, M. and Rowley, C.W., "Reduced-order models for control of channel flow using balanced proper orthogonal decomposition", SIAM Conference on Control and Its Applications, San Francisco, CA, June 2007
- Ilak, M. and Rowley, C.W., "Reduced-order models for closed-loop control of transitional channel flow using balanced proper orthogonal decomposition", 2007 Thousand Islands Fluid Dynamics Meeting, Gananoque, Ontario, Canada, April 2007
- Ilak, M. and Rowley, C.W., "Control-oriented models of linearized channel flow using balanced proper orthogonal decomposition", 59th American Physical Society Division of Fluid Mechanics Meeting, Tampa, Florida, November 2006

REFERENCES

Available upon request.