

PROMOTION RECOMMENDATION  
The University of Michigan  
College of Engineering

Anouck R. Girard, assistant professor of aerospace engineering, Department of Aerospace Engineering, College of Engineering, is recommended for promotion to associate professor of aerospace engineering, with tenure, Department of Aerospace Engineering, College of Engineering.

Academic Degrees:

Ph.D.	2002	University of California, Ocean Engineering, Berkeley, CA
M.S.	1998	Florida Atlantic University, Ocean Engineering, Boca Raton, FL
Ingénieur	1997	Ecole des Mines d'Ales, Computer Science & Engineering, Ales, France

Professional Record:

2006 - present	Assistant Professor, Department of Aerospace Engineering, University of Michigan
2004 - 2006	Assistant Professor, Department of Mechanical Engineering, Columbia University, New York, NY
2002 - 2004	Post-doctoral Researcher and Lecturer, University of California, Berkeley, CA

Summary of Evaluation:

Teaching: Professor Girard is an outstanding teacher with a reputation for always being available to undergraduates for extra help. She has taught a wide range of courses (three graduate and three undergraduate), two of which are new courses she developed. Her course evaluations are consistently high, with Q1 scores ranging from 4.08 to 4.71, and Q2 scores ranging from 4.28 to 4.91. Students are enthusiastic about her excellent teaching, mentoring, and her availability to meet with students outside of class hours.

Professor Girard has also been active as a student mentor, graduating five Ph.D. and seven Master's students. She is currently working with another four Ph.D. students and one postdoctoral fellow. In addition, she has directed two major undergraduate projects in design competitions, and involving undergraduates in leading-edge research.

Research: Professor Girard has established herself as an expert in cooperative control of unmanned vehicles and related research areas. Her work is soundly based in experimental work, and her publication rate has been accelerating, bringing her total number of journal articles to 17 (including one technical note). With her current group of one post-doc, four Ph.D. students, two M.S. students, and her leading of the renewed Michigan/AFRL Collaborative Center in Control Science (MACCCS or MAX), this appears to be a sustainable gradient for research results. Some of her current research has focused on the design of the communication policies in networked supervisory control. In order to successfully operate the system and improve safety, agents (unmanned aircrafts, operator centers) share their knowledge of system dynamics via communication. She has developed algorithms for scheduling communication of state-estimation information based on agents' estimation of the changing environment, by which each agent obtains enough information but avoids excessive communication, while providing guarantees that undesired behavior is eliminated and safety ensured. In addition, she has developed numerous algorithms for reducing information acquisition, while guaranteeing observation is sufficient for making decisions that ensure a successful mission. More importantly her research is making a scholarly impact on the community as evidenced by external letters.

### Recent and Significant Publications:

- B. Hyun, C.J. Park, W. Wang, and A.R. Girard, "Heterogeneous Human Operator Team in Classification Tasks: Modeling and Supervisory Control using Discrete Event Systems," *Proceedings of IEEE*, Accepted, 2011.
- B. Hyun, P. Kabamba, and A. Girard, "Optimally-Informative Path Planning for Dynamic Bayesian Classification," *Optimization Letters*, Accepted, 2011.
- J. Jackson, M. Faied, and A. Girard, "Comparison of Tabu/2-opt Heuristic and Optimal Tree Search Method for Assignment Problems," *International Journal of Robust and Nonlinear Control*, to appear, August 2011 issue.
- C. Orłowski and A. Girard, "Modeling and Simulation of the Nonlinear Dynamics of Flapping Wing Micro-Air Vehicles," *AIAA Journal*, 49(5):969–981, 2011.
- W. Wang, A. R. Girard, and C. Gong, "Computing all Minimal Sensor Activation Policies," *IEEE Transactions on Automatic Control*, conditionally accepted as a technical note, 2010.
- W. Wang, A. R. Girard, S. Lafortune, and F. Lin, "On Codiagnosability and Coobservability with Dynamic Observations," *IEEE Transactions on Automatic Control*, to appear in Aug. 2011.
- W. Wang, S. Lafortune, A. R. Girard, and F. Lin, "Optimal Dynamic Sensor Activation for Diagnosing Discrete Event Systems," *Automatica*, Vol. 46, no. 7, Jul. 2010, pp. 1165-1175.

Service: Professor Girard's service record is exemplary. She serves as an outstanding role model for girls and young women in technical fields. She regularly participates in technical conferences, organizing and chairing sessions. She served for two years as an associate editor on the ASME Dynamic Systems and Control Division Conference Editorial Board. She is an elected member of the AIAA Guidance, Navigation, and Control Technical Committee. At the department level, service has included membership in the Aerospace Engineering Graduate Committee and Faculty Search Committee.

### External Reviewers:

Reviewer A: "Anouck Girard's work brings an important quantitative perspective to bear, and I think the work she and others like her are doing has the potential to eventually influence research on human behavior in other disciplines...From what I can tell, she is most deserving of tenure and promotion to the level of Associate Professor."

Reviewer B: "Professor Girard is an exceptional researcher and teacher who has made significant technical contributions of great value to the United States Air Force (USAF) in the area of UAV cooperative control...In summary, I strongly recommend Anouck for promotion to Associate Professor with Tenure."

Reviewer C: "Overall, I am impressed by her ability to work competently and make clear contributions in these very distinct research fields...Professor Girard deserves to be promoted to Associate Professor with tenure...She would be easily eligible for the same promotion at my university and at major research universities."

Reviewer D: "This makes Prof. Girard a valuable asset for your aerospace department, where problems involving classical mechanics stand next to modern problems of decision and control, and only few faculty are available to cover these diverse areas and teach them to undergraduate and graduate students...I therefore give my favorable opinion towards Prof. Girard's promotion to the rank of Associate Professor with tenure."

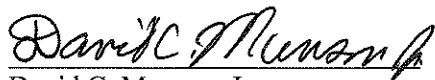
Reviewer E: "I think this is the most successful research project I have contributed to in the course of my career, and this success is in great part due to Dr. Girard's leadership and vision...I highly recommend her for promotion and tenure."

Reviewer F: “Anouck’s combination of intelligence, motivation, perseverance and overall competence in so many areas puts her in a class by herself...Anouck is brilliant, both theoretically and experimentally and has demonstrated excellent technical and leadership skills in several large sponsored programs...I highly recommend Anouck Girard for promotion to tenure.”

Reviewer G: “I personally think Anouck’s main contributions as being someone who is good at taking a complex problem, implementing algorithms that solve that problem, and then exploring the various tradeoffs in the design space...I have been very impressed with Anouck’s contributions to the MAX Center and her leadership of that group.”

Reviewer H: “Again, this study illustrates a practical approach to a problem of importance, and demonstrates one of Anouck’s strengths, that she chooses the solution methodology based on her analysis of the best tool to use to solve the problem, rather than trying to find a problem which is a good example for the tools that she has developed...I therefore recommend Anouck for this promotion.”

Summary of Recommendation: Professor Girard is an outstanding teacher and active mentor. She has established herself as an expert in cooperative control of unmanned vehicles and related research areas. Her service record is exemplary. It is with the support of the College of Engineering Executive Committee that I recommend Anouck R. Girard for promotion to associate professor of aerospace engineering, with tenure, Department of Aerospace Engineering, College of Engineering.



David C. Munson, Jr.  
Robert J. Vlasic Dean of Engineering  
College of Engineering

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