

JESSE B. HOAGG

Associate Professor
Department of Mechanical Engineering
University of Kentucky

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Professional Preparation

Duke University	Durham, NC	Civil & Environmental Engineering	B.S.E. 2002
University of Michigan	Ann Arbor, MI	Aerospace Engineering	M.S.E. 2003
University of Michigan	Ann Arbor, MI	Mathematics	M.S. 2005
University of Michigan	Ann Arbor, MI	Aerospace Engineering	Ph.D. 2006

Appointments

2016 – Present Associate Professor, Dept. of Mechanical Engineering, University of Kentucky
2010 – 2016 Assistant Professor, Dept. of Mechanical Engineering, University of Kentucky
2009 – 2010 Postdoctoral Research Fellow, Department of Aerospace Engineering, University of Michigan
2008 – 2009 Engagement Manager, McKinsey & Company, Chicago, IL
2006 – 2008 Associate, McKinsey & Company, Chicago, IL
2002 – 2006 NDSEG Fellow, Dept. of Aerospace Engineering, University of Michigan
2003 – 2005 Space Scholar, Air Force Research Laboratory, Albuquerque, NM
2002 Teaching Assistant, Dept. of Civil and Environmental Engineering, Duke University
2001 – 2002 Pratt School of Engineering Undergraduate Research Fellow, Duke University
2000 Research Assistant, Georgia Institute of Technology, Mid-American Earthquake Center

Five Products Most Closely Related to the Proposed Project

1. X. Zhang and J. B. Hoagg, “Subsystem identification of multivariable feedforward and feedback systems,” *Automatica*, vol. 72, pp. 131–137, 2016. DOI: [10.1016/j.automatica.2016.05.027](https://doi.org/10.1016/j.automatica.2016.05.027)
2. J. Mullen, S. C. C. Bailey, and J. B. Hoagg, “Filter dynamic inversion for altitude control of fixed-wing unmanned air vehicles,” *Aerospace Science and Technology*, vol. 54, pp. 241–252, 2016. DOI: [10.1016/j.ast.2016.04.013](https://doi.org/10.1016/j.ast.2016.04.013)
3. X. Zhang and J. B. Hoagg, “Frequency-domain subsystem identification with application to modeling control strategies used by humans,” *Systems & Control Letters*, vol. 87, pp. 36–46, 2016. DOI: [10.1016/j.sysconle.2015.10.009](https://doi.org/10.1016/j.sysconle.2015.10.009)
4. J. B. Hoagg and T. M. Seigler, “Decentralized filtered dynamic inversion for uncertain minimum-phase systems,” *Automatica*, vol. 61, pp. 192–200, 2015. DOI: [10.1016/j.automatica.2015.08.012](https://doi.org/10.1016/j.automatica.2015.08.012)
5. B. J. Wellman and J. B. Hoagg, “Quadratically parameterized root locus analysis,” *IEEE Transactions on Automatic Control*, vol. 59, no. 7, pp. 1803–1817, 2014. DOI: [10.1109/TAC.2014.2314519](https://doi.org/10.1109/TAC.2014.2314519)

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Five Other Significant Products

1. J. B. Hoagg and T. M. Seigler, “Filtered feedback linearization for nonlinear systems with unknown disturbance,” *Systems & Control Letters*, vol. 62, no. 8, pp. 613–625, 2013. DOI: [10.1016/j.sysconle.2013.04.002](https://doi.org/10.1016/j.sysconle.2013.04.002)
2. J. B. Hoagg and T. M. Seigler, “Filtered-dynamic-inversion control for unknown minimum-phase systems with unknown-and-unmeasured disturbances,” *International Journal of Control*, vol. 86, no. 3, pp. 449–468, 2013. DOI: [10.1080/00207179.2012.738938](https://doi.org/10.1080/00207179.2012.738938)
3. J. B. Hoagg and D. S. Bernstein, “Retrospective cost model reference adaptive control for nonminimum-phase systems,” *Journal of Guidance, Control, and Dynamics*, vol. 35, no. 6, pp. 1767–1786, 2012. DOI: [10.2514/1.57001](https://doi.org/10.2514/1.57001)
4. J. B. Hoagg, M. A. Santillo, and D. S. Bernstein, “Discrete-time adaptive command following and disturbance rejection with unknown exogenous dynamics,” *IEEE Transactions on Automatic Control*, vol. 53, no. 4, pp. 912–928, 2008. DOI: [10.1109/TAC.2008.920234](https://doi.org/10.1109/TAC.2008.920234)
5. J. B. Hoagg and D. S. Bernstein, “Direct adaptive dynamic compensation for minimum phase systems with unknown relative degree,” *IEEE Transactions on Automatic Control*, vol. 52, no. 4, pp. 610–621, 2007. DOI: [10.1109/TAC.2007.894512](https://doi.org/10.1109/TAC.2007.894512)

Synergistic Activities

- *Wing Design Competition:* The Wing Design Competition (WDC) is a unique opportunity for high-school students to gain hands-on engineering experience while simultaneously learning STEM. Through WDC, students work in teams to design, build, and fly scaled aircraft wing. J. Hoagg collaborated with the Institute for Aerospace Education and NASA Kentucky to initiate this competition in 2011. WDC has participation from over 300 high-school students from over 20 high schools across Kentucky and Tennessee. The competition provides students with a hands-on engineering experience and showcases potential career opportunities in STEM.
- *Discrete-Time Adaptive Control Software Package:* Developing a software package of discrete-time adaptive control techniques intended for broad public availability and use. This software package provides users easy access to state-of-the-art adaptive control software for a wide range of applications (e.g., aerospace, automotive, energy).
- *Associate Editor, IEEE Control Systems Society, Conference Editorial Board, 2013–present*
- *Graduate textbook on Linear-Quadratic Control:* J. Hoagg is currently preparing a textbook manuscript on multivariable linear feedback control, focusing on linear-quadratic control. This book provides a linear-algebraic presentation of the fundamental results in linear-quadratic control. The book serves as a graduate-level text on linear-quadratic control, and a reference for practicing control engineers.