



Honoring Elmer Gilbert (1930-2019) and his contributions to Control Systems

Human-Computer Interaction in the Michigan Embedded Control Lab



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Professor

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3:30 pm – 4:30 pm 1500 EECS

ABSTRACT: For twenty years haptic interfaces have been used in the Embedded Control Lab at the University of Michigan to teach the principles of embedded control design. (A spin-off class at ETH Zurich has been taught for twelve years.) In this talk we describe research projects that arose directly from the student lab exercises, and whose results have in some cases been incorporated back into the coursework. One of these involves the fact that haptic feedback, unlike visual feedback, carries both information and power, and thus may change the dynamics of the system in which it is used. Another involves the way in which a human may use the Internal Model Principle to accomplish a desired task.

BIO: Professor James Freudenberg has been on the faculty of the EECS Department since 1984. His research interests include fundamental design limitations in feedback and embedded control systems, robotics and computer vision, linear feedback control, and modeling and control of automotive powertrain Systems.

He leads the college's Master's Program in Automotive Engineering, an advanced professional degree program with focus on recent advances in automotive engineering. Prof. Freudenberg has been key in keeping ECE active in Michigan's presence as an automotive engineering powerhouse.

Prof. Freudenberg received his Bachelor's of Science degrees in Mathematics and Physics from Rose-Hulman Institute of Technology in 1978 and worked for a year at Rockwell/Collins Avionics where he designed Kalman filters for aircraft navigation. He then attended the University of Illinois where he received his M.S. and PhD degrees in Electrical Engineering.