

J. Karl Hedrick: Biography

Dr. Hedrick is the James Marshall Wells professor of Mechanical Engineering at the University of California at Berkeley, where he teaches graduate and undergraduate courses in automatic control theory. He is currently the director of Berkeley's Vehicle Dynamics Laboratory as well as the principal investigator of the Office of Naval Research center at Berkeley, the Center for the Collaborative Control of Unmanned Vehicles.

Hedrick served as chair of the Mechanical Engineering department at UC Berkeley (1999-2004) and director of the University of California PATH (Partners for Advanced Transit and Highways) Research Center (1997-2003). A multidisciplinary research program located at the Richmond Field Station, PATH conducts research in a variety of transportation areas including advanced vehicle control systems, advanced traffic management and information systems, and technology leading to an automated highway system.

Prior to joining the faculty at UC Berkeley, Hedrick was a professor of Mechanical Engineering (1974-88) at the Massachusetts Institute of Technology, Cambridge, where he directed the Vehicle Dynamics Laboratory.

Hedrick has made seminal contributions to nonlinear estimation and control, from describing functions to sliding mode observers, sliding mode control and dynamic surface control. His research has concentrated on the development of nonlinear control theory and on its application to a broad variety of transportation systems including automated highway systems, power train control, embedded software design, formation flight of autonomous vehicles and active suspension systems.

A recognized expert in transportation systems, Hedrick has more than 110 archival journal publications. He is was a member of the board of directors of the International Association of Vehicle System Dynamics and was also the editor of the *Vehicle Systems Dynamics Journal*. He has served on many national committees including the Transportation Research Board, the American National Standards Institute and the National Cooperative Highway Research Program. He has offered short courses in the United States and Europe on active and semi-active suspensions, nonlinear control theory, automated highway systems and unmanned vehicle systems.

An ASME Fellow, Hedrick is past chair of the Dynamic Systems and Control Division and its Honors Committee. Hedrick is a member of the Society of Automotive Engineers and the American Institute of Aeronautics and Astronautics.

Among his honors are an Outstanding Paper Award (1998) from the Institute of Electrical and Electronics Engineers and the American Automatic Control Council's O. Hugo Schuck Best Paper Award (2003). He received the ASME Division of Dynamic Systems and Control's Outstanding Investigator Award (2002) and received the ASME

Journal of Dynamic Systems, Measurement and Control Best Paper award in 1983 and 2001. He is the recipient of the ASME's 2006 Rufus Oldenburger Medal.

Hedrick received his bachelor's degree in Engineering Mechanics at the University of Michigan, Ann Arbor, in 1966. He earned his MS and Ph.D. in Aeronautical and Astronautical Engineering at Stanford University, California, in 1970 and 1971, respectively.