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INTRODUCTION

Neural Networks on the Rise

This second edition, PT-110, of the *Electronic Engine Control Technologies* book in the Automotive Electronics Series contains 99 papers, none of which was published in PT-73, the first edition. It contained 46 papers.

The format herein is the presentation first of papers addressing specific engine controls (e.g., fuel injection). These papers are followed by others in the areas of diagnostics, engine modeling, innovative solid-state hardware and software systems, communications techniques for engine control, neural network applications, and a final paper looking to the future of electronic engine control technologies.

A few comments are in order about decisions that were made as to what has and has not been included in this book, as well as about why certain papers have been placed under one category rather than another.

- Sensors are, of course, extremely important in engine control applications, but sensor papers, for the most part, have not been included. The reason is that PT-105, the second edition of *Sensors and Transducers*, has just been published. It contains 105 papers, none of which was published in the first edition, PT-68, which contained 60 papers. Many of the papers in both editions apply to engine controls.

- Although there are five papers included on diagnostics, those interested in more information are referred to PT-81, *On- and Off-Board Diagnostics*.

- There are instances in which an arbitrary, but hopefully logical, decision was made as to under which category a paper was placed. For example, Paper No. 2003-01-0356, “Feedback Error Learning Neural Networks for Air-to-Fuel Ratio Control in SI Engines,” was placed with other neural network applications papers rather than with papers under the heading, Air Fuel Ratio Controls. The rationale for this action was to offer evidence of how neural network applications have been on the rise in recent years. If, instead, the neural network applications papers had been scattered throughout the book under specific application categories, the increasing trend in their applications would have been less obvious.

* * * * * * * * * * *

This book and the entire Automotive Electronics Series are dedicated to my friend Larry Givens, a former editor of SAE’s monthly publication, *Automotive Engineering*.

Ronald K. Jurgen, Editor
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