Classical Wrap Up

This issue of *IEEE Control Systems Magazine (CSM)* provides yet another opportunity to revisit classical ideas and re-appreciate the depth and power of the fundamental ideas in our field. The special section begins with an introduction by Jie Chen and Dan Davison, guest editors of the special sections in both this issue and the February 2007 issue. Next, we have an article by Benoit Boulet and Yingxuan Duan on one of the most basic control problems, namely, the tradeoff between stability and performance. The tools that the authors use reflect modern techniques and thus provide a natural bridge between worlds. Next, the article by Jesse Hoagg and myself addresses a major bugbear of control, namely, nonminimum-phase zeros. In our article, we look at various ramifications of this nefarious phenomenon to better understand its full ramifications.

The special section on classical control revisited also includes an education article by Jorge Cortés and William Dunbar, which describes a course they developed and taught for high school students. Their success shows that control ideas can be introduced with minimal mathematics while generating maximal excitement.

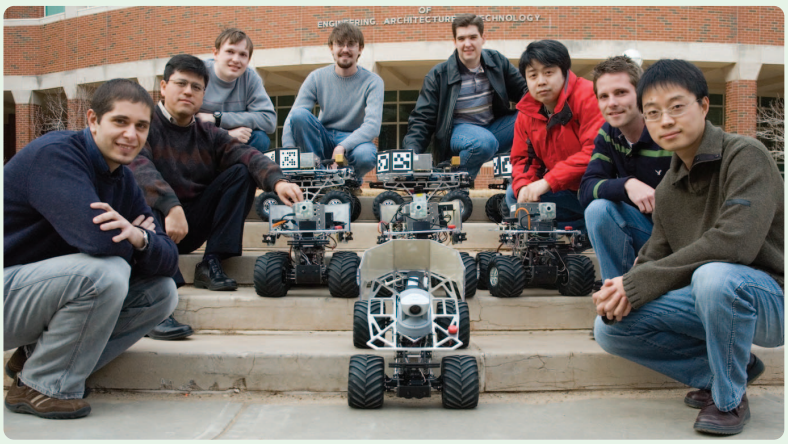
A pair of lecture notes completes the theoretical portion of the special section. The note by Kent Lundberg and myself is intended as a kind of red flag with regard to the treatment of initial—or, more precisely, pre-initial—conditions. Next is a lecture note by Jie Chen, Kent Lundberg, Dan Davison, and myself on the final value theorem and some of its extensions. This note started as a filler, with reviewers requesting an increasingly

Contributors

William Dunbar

Jesse Hoagg

Benoit Boulet with his wife Isabelle and sons Emile (left) and Justin.



From left: Carlo Branca, Rafael Fierro, James McClintock, Michael Wood, Brent Perteet, Feng Xie, Matthew Baustert, and Yuan Cao.

more precise treatment until it grew into a full-fledged lecture note. Fortunately, we converged in finite time.

The special section concludes with a unique project by Dan Davison, Jie Chen, IEEE *CSM* Associate Editor for Book Reviews Scott Ploen, and myself on "favorite classical control" textbooks. We received some extremely interesting comments, which we are happy to share. If you would like to add your comments to those in the article, please write to me.

Fittingly, the "25 Years Ago" column of this issue, which is the responsibility of IEEE *CSM* Associate Editor for History Kent Lundberg, is a reprint of the obituary of Hendrik W. Bode.

This issue also includes a feature article by Daniel Cruz, James McClintock, Brent Perteet, Omar Orqueda, Yuan Cao, and Rafael Fierro. Their article describes COMET, a multivehicle testbed that can execute a wide range of behaviors, such as surveillance and obstacle avoidance. Before you read their article, I urge you to watch the ultracool videos at http://marhes.okstate.edu/index.htm?multimedia.htm. Readers interested in multivehicle testbeds might also take a look at the HoTDeC testbed described in the June 2006 issue.

We also bring you an augmented "People in Control" column, which includes a pair of interviews as well as the 2006 IEEE Control Systems Society (CSS) Fellows. In addition, IEEE CSS Vice President for Member Activities Maria Elena Valcher recognizes 949 CSS members who, in 2006, marked 25 or more years of membership. The list is a veritable who's who of control.

To round out the issue we have three book reviews, two workshop reports, and the recently instituted "Product Spotlight" column. Finally, last but not least, we have the latest installment from artist-in-residence Sam Bernstein. You might have noticed his "Amazing Technology" artwork in the April issue. Thank you again, Sam.

Dennis S. Bernstein