

In this issue, “25 Years Ago” revisits the article “Bat-Like Sonar for Guiding Mobile Robots” by Roman Kuc and Billur Barshan in *IEEE Control Systems Magazine*, vol. 12, no. 4, pp. 4–12, 1992. Below is an excerpt from the article.

The prey capture ability of bats impacts directly on the problem of docking two robots.

PREY-CAPTURE ABILITY OF BATS

How do bats manage to catch insects? While the basic ideas have been known for some time [1], the availability of improved instrumentation has allowed this question

to be reexamined by neuroscientists [2] and psychologists [3], [4], exploring the perception of the sonar signals and their mapping in the brain. From the engineering perspective, bat echolocation was analyzed by applying optimum correlation detection for binaural estimation of travel time and prey location [5]. Attempts are being made at applying some of these principles into hardware [6]. The same question is also relevant in the field of robot-

ics. The prey capture ability of bats impacts directly on the problem of docking two robots, which is becoming important in multi-robot systems. This problem has been investigated by using infrared sensors [7] and by using camera vision [8]. We demonstrate that sonar can also accomplish docking. The main problem with current sonar systems, however, is that they do not work very reliably in unstructured environments. Problems arise

Digital Object Identifier 10.1109/MCS.2017.2697211

Date of publication: 18 July 2017

IEEE CONTROL SYSTEMS MAGAZINE BOARD <<

EDITOR-IN-CHIEF

Jonathan P. How
Massachusetts Institute of Technology
77 Massachusetts Avenue
Room 33-326
Cambridge, MA 02139 USA
Phone: +1 617 253 3267
Fax: +1 617 253 7397
jhow@mit.edu

PAST EDITORS-IN-CHIEF

Mo Jamshidi (1981–1984)
Herbert E. Rauch (1985–1992)
Stephen Yurkovich (1993–1998)
Tariq Samad (1999–2003)
Dennis S. Bernstein (2003–2011)
Richard D. Braatz (2012–2014)

ASSOCIATE EDITORS, BOOK REVIEWS

Scott R. Ploen
Jet Propulsion Laboratory
scott.r.ploen@jpl.nasa.gov

Hong Yue
University of Strathclyde

Hesuan Hu
Xidian University

ASSOCIATE EDITOR, EDUCATION

Kam K. Leang
University of Utah

ASSOCIATE EDITOR, HISTORY

Rolf Findeisen
*Otto-von-Guericke University
Magdeburg*

TECHNICAL ASSOCIATE EDITORS

Behçet Açikmese
*University of Texas
at Austin*

Francesco Borrelli
*University of California,
Berkeley*

Daniel Davison
University of Waterloo

Warren Dixon
University of Florida

Antonella Ferrara
University of Pavia

J. Sean Humbert
*University of Colorado,
Boulder*

Yiguang Hong
*Chinese Academy of
Sciences*

Liu Hsu
*Federal University
of Rio de Janeiro*

William Pasillas Lepine
CNRS

Marco Pavone
Stanford University

Daniel Quevedo
*Paderborn University,
Germany*

Camille Alain Rabbath
*Defence Research and
Development Canada*

Simona Sacone
University of Genova, Italy

Doris Saez Hueichapan
Universidad de Chile

Changyun Wen
*Nanyang Technological
University*

Yildiray Yildiz
*Bilkent University,
Turkey*

CONFERENCE
ACTIVITIES
Joshua Isom
Air Products

ASSISTANT EDITOR
Jeremy G. VanAntwerp
Calvin College

Digital Object Identifier 10.1109/MCS.2017.2697238