

## CURRICULUM VITAE

**Name:** Edward J. Davison  
**Date of Birth:** September 12, 1938  
**Place of Birth:** Toronto, Canada  
**Nationality:** Canadian  
**Marital Status:** Married, 4 children

### Education:

A.R.C.T. 1957 Royal Conservatory of Music, Toronto  
Piano  
B.A.Sc. 1960 University of Toronto  
Engineering Physics – Electrical Option  
M.A. 1961 University of Toronto  
Department of Applied Mathematics  
Ph.D. 1964 Cambridge University, England  
Department of Control Engineering

### Honorary Degrees and Honours:

Sc.D. 1977 Cambridge University, England  
F.R.S.C. 1977 Elected Fellow of Royal Society of Canada  
F.I.E.E.E. 1978 Elected Fellow of Institute of Electrical and Electronic  
Engineers (IEEE) for “Contributions to Control System Theory”  
1986 Elected “Honorary Professor” of Beijing  
Institute of Aeronautics and Astronautics, Beijing, PRC, Oct. 1986  
2001 Elected to rank of “University Professor”, University of Toronto  
(highest honour granted by the University of Toronto), Jan. 2001  
2003 Elected “Life Fellow of IEEE” of IEEE  
2005 Elected “Guest Professor, Center of 21st Century COE project”  
of Tokyo Denki University, Japan, May 2005 - May 2008  
F.C.A.E. 2005 Elected Fellow of Canadian Academy of Engineering, June 2005  
2005 Elected Fellow of International Federation of Automatic Control, July 2005  
2010 Elected Foreign Member of the National Academy of Engineering (NAE)

### Awards Obtained:

1. Awarded 2010 Canada Outstanding Engineer Award given by the 2010  
Institute of Electrical & Electronic Engineers (IEEE) Canada
2. Inducted into the University of Toronto Engineering Alumni Hall of 2003  
Distinction
3. Awarded the Canada Council Killam Prize in Engineering 2003
4. Elected Member of Russian Academy of Nonlinear Sciences (ANS) 1998  
Moscow, Russia
5. Awarded the IEEE Control System Society’s Hendrik W. Bode Lec- 1997  
ture Prize (this is the highest award granted by the IEEE Control  
System’s Society) for “seminal contributions to control system theory  
and for fundamental contributions to industrial control applications”.
6. Awarded the International Federation of Automatic Control (IFAC) 1996  
Outstanding Service Member Medal

7. Awarded the 1993 Triennial Quazza Medal from the International Federation of Automatic Control (IFAC), July 1993 (this award is the highest honour granted by the federation and is presented once every three years to an individual who has made significant long-term research contributions to the field of automatic control) for “seminal contributions to linear system theory and his work on industrial applications”. 1993
8. Awarded the IEEE Centennial Medal 1984
9. Elected “Distinguished Member” of IEEE Control System Society 1984
10. Several NRC Postgraduate and Other Scholarships 1956-1964

**Fellowships Obtained:**

1. Killam Research Fellowship 1981-1983
2. Killam Research Fellowship 1979-1980
3. E.W.R. Steacie Memorial Fellowship 1974-1977
4. Athlone Fellowship 1961-1963

**Academic/Teaching Experience:**

- 1964-1966 Assistant Professor, Department of Electrical Engineering, University of Toronto
- 1966-1967 Assistant Professor, Department of Electrical Engineering and Computer Sciences, University of California, Berkeley
- 1967-1968 Assistant Professor, Department of Electrical Engineering, University of Toronto
- 1968-1974 Associate Professor, Department of Electrical Engineering, University of Toronto
- 1974-2001 Professor, Department of Electrical and Computer Engineering, University of Toronto
- 2001- 2004 University Professor, Department of Electrical and Computer Engineering, University of Toronto
- 2004-present University Professor Emeritus, Department of Electrical and Computer Engineering, University of Toronto, July 2004
- 1990 Awarded 1990 Electrical Club Teaching Award for Exceptional Teaching at Fourth Year
- 2002 Awarded 2002 Electrical and Computer Engineering Club Teaching Award “Best Computer Engineering Professor for 2002 Spring Session”, Nov 2002

**Graduate Students Supervised:**

- 1964-2013 51 M.A.Sc. students successfully supervised
- 24 Ph.D. students successfully supervised
- |                |              |                |                  |
|----------------|--------------|----------------|------------------|
| P.I.P. Boulton | A. Vaz       | Qiu Li         | V.H. Quintana    |
| W. Gesing      | M. Chang     | S.G. Chow      | G. West-Vukovich |
| A. Aghdam      | A. Solomon   | B. Scherzinger | L. Ben Jemaa     |
| M. Kaltenbach  | Zhang Hongyi | G. Hu          | A. Goldenberg    |
| T.N. Chang     | R. Milman    | N. Tripathi    | D.E. Miller      |
| M.E. Khatir    | B. Roszak    | S. Lam         | S. Huang         |
- 38 Post-doctoral man years successfully supervised
- |               |                 |               |                  |
|---------------|-----------------|---------------|------------------|
| V.H. Quintana | M.K. Khadzhinov | Hongyii Zhang | Qiu Li           |
| S.H. Wang     | V. Zhirnov      | Weili Huang   | Hikaru Shimizu   |
| H.A. Fathi    | Ying-Li Zhang   | Hu Yang Zeng  | Shigeyasu Kawaji |
| Dongyi Chen   | Wei Yu          | Amir Aghdam   | Mohammad Bozorg  |
| R. Milman     | Ahmad R. Momeni |               |                  |

	Other:	Ecole Nationale Supérieure de l'Aéronautique et de l'Espace, Toulouse, France
		Tran Dinh Khai, May - August 1988
		Pierri Lesluyes, May - August 1988
		F. Bruyere, May - August 1987
2013-present	0	Ph.D. student in progress
	1	M.A.Sc. student in progress
	1	Post-doctoral student

### University Administration:

#### Departmental:

1. Member of Undergraduate Student-Staff Committee, 1968-1970.
2. Member of Subcommittee on Procedures for Senior Promotion, 1978.
3. Member of Promotions Committee, 1978-1979; 1980-1981.
4. Member of Committee re Recommendations for Guidelines for Staff Load Calculations, 1978.
5. Member of Student-Staff Committee, 1980.
6. Chairman of Electrical Engineering Advisory Committee on Computing, 1984-1986; member 1987.
7. Member of Senior Promotions Committee, 1988-1992.
8. Member of Strategic Planning Committee, 1994-1995.
9. Chairman, PhD Qualifying Exam Committee, 1994.
10. Chairman, Teaching Load Committee, 1996.
11. Member of Policy on Endowed Chairs Committee, 1996, 1976.
12. Member of Tenure Committee, 1996, 1997.
13. Member of Senior Promotions Committee, 1999.
14. Chairman of Systems Control Group and Member of Executive Committee, 1972 - 1974; 1978 - 1979; 1981 - 1984; 2002 - 2004.
15. Member of Search Committee for Systems Control Group and Wave Group, 2001 - 2003.
16. Member of Search Committee, Systems Control Group, 2000 - 2001.
17. Member of Graduate Appeals Committee, 2002 - 2004.
18. Member of Advisory Committee for Determining "Progress through Rank" (PTR), 2004 - 2006.
19. Member of ECE Departmental Strategic Complement Planning and Action Committee, 2007 - 2008.

#### Faculty:

1. Member of Faculty Committee on Mathematics, 1967-1968.
2. Member of Engineering-Science Curriculum Committee, 1973-1974.
3. Member of Management Committee for Energy Systems Proposal, 1974-1977.
4. Member of 1977 Decanal Space Committee, 1977-1979.
5. Member of Decanal Senior Promotions Committee, 1979.
6. Member of Tenure Committee, 1980.
7. Member of Search Committee for Department Chairman, 1980.
8. Member of Task Force on Nuclear Engineering, 1982.
9. Chairman of Committee on Research and Advanced Studies, 1990.
10. Member of Faculty Examinations Committee, 1993-1997.
11. Engineering Committee on Mathematics, 1994-1995.
12. Chairman of Examinations Committee, 1995 (summer).

13. Member of Faculty Examinations Committee, 2001-2004.

**University:**

1. Member of Committee on Ethics in Research and Scholarship, 1977-1983.
2. Member of Review Committee dealing with Research Protocols involving the use of human subjects, 1977-1983.
3. Member of University Research Board, 1986-1989.
4. Chairman of External Grants Selection Committee, 1987-1990.
5. Member of "Presidential Colloquium on Research", Sept. 19,20, 1989.
6. Member of University Provostial Task Force on Mathematics, 1994-1997.
7. Member of University Appeals Committee, 1997-1999.

**Professional Administration:**

1. Elected member of IEEE Control Systems Society Administrative Committee, 1977-1980 and 1980-1983.
2. Member of International Federation of Automatic Control Theory Committee, 1970-present.
3. Member of International Federation of Automatic Control Mathematics of Control Committee, 1976-1979.
4. Vice-Chairman of IFAC Theory Committee, 1978-1981; 1981-1984; 1984-1987.
5. Vice-President (Technical Affairs) of IEEE Control Systems Society, 1979-1981.
6. President-Elect of IEEE Control Systems Society, 1982.
7. President of IEEE Control Systems Society, 1983.
8. Member of the Killam Selection Award Committee, Canada Council, 1985-1987.
9. Chairman of IFAC Theory Committee, 1987-1990.
10. Director of IFAC Canada (National Member Organization of IFAC), 1985-present.
11. Member of "Scholar Patricians Workshop", Science Council of Canada, Sept. 16,17, 1988.
12. Member of "Research 2000, Steacie Fellows Workshop" (NSERC), Ottawa, Sept. 1988.
13. Vice-Chairman of IFAC Technical Board, 1990-1993.
14. Member of IFAC Council, 1990-1993.
15. Member of Canadian Engineering Accreditation Board for accreditation meeting of Queens University, Oct. 28-30, 1990.
16. Member, Royal Society of Canada, Applied Science and Engineering Division Selection Committee, 1990.
17. Elected to Council of Academy of Science of the Royal Society of Canada, April 1996.
18. Vice-Chairman of Policy Committee of International Federation of Automatic Control, 1996-1999.
19. Consultant for Canadian Engineering Accreditation Board for Accreditation of Dept. of Electrical & Computer Engineering, University of Waterloo, Graduate Program, May 7, 8, 1999.
20. Member of International Review Committee of Leading Edge Endowment Fund of British Columbia, Oct 9-11, 2003, and Oct 2004.
21. Member of IFAC Administration and Finance Committee, 2002 - 2005.
22. Member of Postsecondary Education Quality Assessment Board (PEQAB), Quality Assessment Panel(QAP), for Bachelor of Applied Technology Degree (Control Systems Technology) proposed by Seneca College of Applied Arts and Technology, Feb - April 2006.

23. Member of IFAC Quazza Medal Selection Committee, 1993 - 1996; 1996 - 1999; 1999 - 2002; 2002 - 2005; 2005 - 2008; 2008 - 2011.
24. Member of IFAC Fellow Selection Committee, 2005 - 2008; 2008 - 2011.
25. Member of IFAC Canada 2012 American Control Conference Advisory Committee, 2008 - 2012.

### **Industrial Experience:**

1. Avro Aircraft Co., Malton: Initial Projects Group, Summer 1958.
2. Ontario Hydro Research Division, Toronto: Electronics Wing, Summer 1959.
3. National Research Council, Ottawa: Electrical Engineering Group, Project II, Summer 1960.
4. Defense Research Board, Valcartier, Quebec (C.A.R.D.E.): Systems Wing, Summer 1961.

### **Consulting Experience:**

1. Atomic Energy of United Kingdom, Windfrith, 1963-1964.
2. Canadian General Electric, Peterboro, 1965-1966.
3. Royal Commission on Electric Power Planning in Ontario, 1976-1977.
4. Member of Electrical Engineering Consociates Ltd., Toronto, 1968-present  
-have consulted for:
  - (i) Toronto Transit Commission, Toronto
  - (ii) Hunttec ('70) Ltd., Toronto
  - (iii) Spar Aerospace Products Ltd., Toronto
  - (iv) Patterson, Grant, Watson (Geophysics Consultants), Toronto
  - (v) Ford Motor Co., Research and Development, Detroit, Michigan, U.S.A.
  - (vi) Department of Communications, Ottawa
  - (vii) Borg Warner (Canada) Ltd., Normar Plant, Coburg, Ontario
  - (viii) Canada Centre for Inland Waters, Environment Canada, Toronto
  - (ix) Trimaxion Engineering Ltd., Toronto
  - (x) Bayer Corp. Ltd. (was Polysar Corp. Ltd.), Sarnia, Ontario
  - (xi) Communications Research Centre (CRC), Ottawa
  - (xii) Canadian Space Agency (CSA), Ottawa
5. Director of Electrical Engineering Consociates Ltd., Toronto, 1977-1982, 1984-2004.
6. Secretary-Treasurer of Electrical Engineering Consociates Ltd., 1994-1997.
7. President of Electrical Engineering Consociates Ltd., 1997-1999.

### **Chairman of Conference Sessions:**

1. Organizer and chairman of "Special Session on Large Scale Systems" at 12th Annual Allerton Conference on Circuit and System Theory, October 2-4, 1974.

2. Chairman of various sessions held at the following conferences:  
 10th Annual Allerton Conference on Circuit and System Theory, October 1972.  
 11th Annual Allerton Conference on Circuit and System Theory, October 1973.  
 Joint Automatic Control Conference, June 1973.  
 Canadian Conference on Automatic Control, September 1973.  
 Joint Automatic Control Conference, June 1974.  
 IEEE Decision and Control Conference, December 1974.
3. Organizer and chairman of “Control Systems Session” at 1st IEEE Large Scale System Symposium, October 11-13, 1982.

**Member of Program Committees for International Conferences:**

1. “3rd IFAC Symposium on Multivariable Technological Systems”, University of Manchester Institute of Science and Technology, September 16-18, 1974.
2. Conference on “Canada’s Energy Future”, University of Toronto, December 11-13, 1974.
3. “IFAC Symposium on Large Scale Systems: Theory and Applications”, Udine, Italy, June 16-20, 1976.
4. “IFAC Symposium on Computer Applications in Large-Scale Power Systems”, New Delhi, India, August 1979.
5. “IFAC Symposium on Large Scale Systems: Theory and Applications”, Toulouse, France, June 1980.
6. “8th IFAC Triennial World Congress on Automatic Control”, Kyoto, Japan, August 1981.
7. “3rd IFAC Symposium on Large Scale Systems: Theory and Applications”, Warsaw, Poland, August 1983.
8. “IFAC Symposium on Computer Aided Design of Multivariable Technological Systems”, Purdue University, West Lafayette, Indiana, September 15-17, 1982.
9. “IFAC Symposium on Large Scale Systems: Theory and Applications”, Zurich, Switzerland, August 1986.
10. “7th IFAC Workshop on Distributed Control Systems”, Mayschoss, France, 1986.
11. “IFAC Symposium on Software for Computer Control”, South Africa, 1988.
12. “1990 IFAC Triannual Congress on Automatic Control”, Tallinn, USSR, August 1990.
13. “IFAC Symposium on Control System Design”, Zurich, Switzerland, Sept. 1991.
14. “IFAC International Symposium on Distributed Intelligence Systems”, Arlington, Virginia, Aug. 13-15, 1991.
15. “1992 IEEE Symposium on Computer-Aided Control System Design”, Napa, California, March 17-19, 1992.
16. “Canadian Conference on Industrial Automation”, Montreal, June 1-3, 1992.
17. “IFAC Symposium on Large Scale Systems: Theory and Applications”, Beijing, PRC, August 23-25, 1992.
18. “2nd IFAC Workshop on System Structure and Control”, Prague, Czechoslovakia, Sept. 3-5, 1992.
19. “IFAC Symposium on Robust Control”, Rio de Janeiro, Brazil, Sept. 1994.
20. “IFAC/IFORS/IMACS Symposium LSS’95 – Large Scale Systems: Theory and Applications”, London, UK, July 11-13, 1995.
21. “IFAC Conference on Control Problems in Industry”, Belfort, France, May 20-22, 1997.
22. “IFAC Symposium on Control of Large Scale Systems: Theory and Application”, Petros, Greece, July 15-17, 1998.

23. "Mediterranean Control and Automation Conference (Med 2000)", Lisbon, Portugal, July 9-12, 2002.
24. "IASTED International Conference on Modelling, Identification, and Control" (MIC 2004), Grindelwald, Switzerland, Feb 22 - 25, 2004.
25. "2008 Canadian Conference on Electrical and Computer Engineering (CCECE08)" Member of Advisory Committee of Control and Robotics, Niagara Falls, May 4-7, 2008.

#### Invited Plenary Addresses:

1. "The Generalized Servomechanism Problem", *3rd Soviet All-Union Conference on Multivariable Systems*, Moscow, USSR, April 9-13, 1973.
2. "Modern Approaches to Control Systems Design", University of Manchester, Institute of Science and Technology Vacation School, England (sponsored by Control Engineering Committee of Science Research Council, U.K.), April 1976.
3. "Simulation of Abnormal Cell Behaviour", *14th Allerton Conference on Circuit & System Theory*, October 1976.
4. "Recent Results on Decentralized Control of Large Scale Multivariable Systems", *IFAC Multivariable Technological System Symposium*, New Brunswick, Canada, July 1977.
5. "Status of Computer-Aided Control System Design for Feedback Design – Nonlinear Optimization Methods", *DE-RPI-NSF Workshop on Control Design*, Schenectady, N.Y., May 20-22, 1981.
6. "Robust Controller Design", University of Manchester, Institute of Science and Technology Vacation School, England (sponsored by Control Engineering Committee of Science Research Council, U.K. ), April 1982.
7. "Large Scale Systems Control", *IFAC Symposium on Theory and Application of Digital Control*, New Delhi, India, January 5-8, 1982.
8. "Computer-Aided-Design of Controllers for Large Systems", *IFAC Symposium on Computer-Aided Design of Multivariable Technological Systems*, Indiana, U.S.A., Sept. 15-17, 1982.
9. "Control and Stabilization of Interconnected Dynamic Systems", *4th IFAC Symposium on Large Scale Systems*, Zurich, Switzerland, Aug. 26-28, 1986.
10. "Decentralized Control of Large Scale Systems", *IEEE Control System Society Workshop on Decentralized & Distributed Control*, The Ohio State University, Columbus, Ohio, September 14-15, 1987.
11. "Recent Results in the Theory of Large Scale Systems", *1990 Bilkent International Conference on New Trends in Communications, Control and Signal Processing*, Bilkent, Turkey, July 2-5, 1990.
12. "Decentralized Control of Large Scale Systems - Applications", *8th Brazilian Congress on Automatic Control*, Belem-PA, Brazil, Sept. 10-14, 1990.
13. "Intelligent Control Using Switching Methods", 1st Workshop on Intelligent Control, Tokyo Institute of Technology, Tokyo, Japan, March 22-23, 1993.
14. "Intelligent Control of Complex Systems", Robert T. Chien Distinguished Lecture, Coordinated Science Laboratory, University of Illinois at Urbana-Champaign, May 2, 1994.
15. "New Directions in Industrial Control", *SIAM Symposium on Industrial Problems and Control Theory*, San Diego, July 25-29, 1994.
16. "Intelligent Servomechanism Control", *IFAC Conference on Control of Industrial Systems*, Belfort, France, May 20-22, 1997.
17. "Control and Automation Beyond the Kindergarten Level", *IEEE Control Systems Society Bode Lecture, IEEE Control & Decision Conference*, San Diego, December 10-12, 1997.

18. "Future Directions in Control Beyond the Year 2001", *ISA Expo 1998, Future Technology for Measurement of Control Theme*, Houston Texas, October 20-24, 1998.
19. "Control and Automation Beyond the Year 2001", *1999 UKACC Plenary Lecture*, Savoy Place, London, March 26, 1999.
20. "New Results in Model Predictive Control", *The 1st COE Seminar 2005, Human Adaptive Mechatronics*, Tokyo Denki University, Akihabara Branch, Japan, May 30, 2005.
21. "The Theory-Practice Gap: Where Are We?", *IEEE Control and Decision Conference/European Control Conference, (CDC-ECC'05)*, (Opening Plenary Address), Seville, Spain, Dec. 12-15, 2005.

### Invited Lecture Series:

1. "The Modelling and Behaviour of Cell Growth" (2 lectures), IBM Yorktown Heights Research Center, N.Y., Dec. 4-11, 1975.
2. "Simulation of Cell Growth: Normal and Abnormal Behaviour" (2 lectures), Dept. of Biochemistry, University of Ottawa, Ontario, Feb. 12, 1976.
3. "The Robust Servomechanism Problem" (3 lectures), Control Systems Centre, UMIST Manchester, England, March 1-6, 1976.
4. "The Decentralized Control of Large Systems" (2 lectures), Electronics Research Lab., M.I.T., Cambridge, Massachusetts, May 3-4, 1976.
5. "Recent Results in Linear Multivariable Control" (5 lectures), Department of Electrical Engineering, University of Illinois, Champaign-Urbana, Illinois, May 16-20, 1977.
6. "The Servomechanism Problem for Centralized and Decentralized Systems" (4 lectures), Center for Mathematical Systems Theory, University of Florida, Gainesville, March 10-15, 1978.
7. "Large Scale Systems Control with Applications" (8 lectures), Instituto Venezolano de Investigaciones Cientificas, Caracas, Venezuela, May 19-24, 1979.
8. "Large Scale Systems: Modelling, Control and Applications" (7 lectures), Dept. of Eng. Electrica, COPPE-UFRJ, Universidade Federal do Rio de Janeiro, Rio de Janeiro, Brazil, June 7-14, 1980.
9. "Decentralized Control of Large Scale Systems" (10 lectures), Dept. of Automatic Control, Beijing Institute of Aeronautics and Astronautics and to Dept. of Automation, Tsinghua University, Beijing, China, Sept. 22 - Oct. 1, 1986.
10. "Decentralized Control" (3 lectures), Dept. of Electrical Engineering and Computer Science, University of Michigan, Ann Arbor, Nov. 23-24, 1987.
11. "Control of Third Generation Spacecraft" (3 lectures), Dept. of Electrical Engineering, University of Illinois, Champaign-Urbana, Illinois, March 23-26, 1988.
12. "Recent Results on Tuning Regulator Theory" (3 lectures), Dept. of Electrical Engineering, Technion Institute, Haifa, Israel, March 20-23, 1989.
13. "Performance Limitations of Non-Minimum Phase Systems", (4 lectures), Kobe University, Kyoto University, Osaka University, Tokyo Institute of Technology, March 15-24, 1993.
14. "Real Structured Stability Radius Problem" (2 lectures), Dept. of Electrical Engineering, University of California, Santa Barbara, Oct. 1-4, 1993.
15. "Computer-Aided-Design of Controllers using Parameter Optimization Methods", (9 lectures), Reserche Centro Fiat, Torino, Italy, Nov. 15-17, 1993.
16. "New Results in: Control of Platoons of Vehicles, Inverted Pendula, and Transient Response Shaping" (4 lectures), 21st Century COE Project, Human Adaptive Mechatronics, Tokyo Denki University, Japan, May 15-30, 2005.



17. “Control and Automation in Society - We have just Begun the Journey”, Distinguished Lecture Presentation, University of Western Ontario, Faculty of Engineering, Jan 26, 2012.

#### **Invited Addresses:**

- Have given over 200 additional invited addresses to Universities and various Research and Development centers including: UCLA, Berkeley, Stanford, MIT, Purdue, Illinois, Florida, Ohio State, Georgia, Connecticut, Waterloo, McGill, New Brunswick, Carleton, Ottawa, Imperial College, Cambridge, Manchester, Tokyo, Osaka, New Delhi, Zurich (ETH), Toulouse, Duesseldorf, Belgrade, Munich, GE, JPL, NASA (Ames), Spar, CRC (Ottawa).

#### **Professional Groups:**

1. Fellow of Royal Society of Canada, 1977-present.
2. Fellow of Institute of Electrical and Electronic Engineers, 1978-2003.
3. Life Fellow of Institute of Electrical and Electronic Engineers, 2003- present.
4. Designated Consulting Engineer of the Association of Professional Engineers of the Province of Ontario, July 1979 - July 1984; July 1984 - July 1989; July 1989 - July 1994; July 1994 - July 1999; redesignated July 1999 - July 2005.
5. Member of Professional Engineers of Ontario, 1966-present.
6. Fellow of International Federation of Control, 2005-present.
7. Fellow of Canadian Academy of Engineering, 2005-present.
8. Foreign Member of the National Academy of Engineering (USA), 2010-present

#### **Editorships:**

1. Associate Editor of IFAC journal *Automatica*, 1974-1988.
2. Associate Editor of journal *IEEE Trans. on Automatic Control*, and member of Information Dissemination Committee, 1974-1976.
3. Guest Associate Editor of journal *IEEE Trans. on Automatic Control*, (special issue on Large Scale Systems), 1977-1978.
4. Associate Editor of journal *Large Scale Systems: Theory and Applications*, 1979-1990.
5. Member of Editorial Advisory Board, *Proceedings of the IEEE*, 1980-1981.
6. Guest Associate Editor of journal *IEEE Trans. on Automatic Control* (special issue on Large Scale Systems), 1982-1983.
7. Guest Associate Editor of Joint Special Issue on Large Scale Systems, *IEEE Trans. on Circuits and Systems*, vol. CAS-30, no. 6, June 1983, *IEEE Trans. on Automatic Control*, vol. AC-28, no. 6, June 1983, *IEEE Trans. on Systems, Man and Cybernetics*, vol. SMC-13, no. 4, July 1983.
8. Member of Editorial Board, *Optimal Control Appl. and Methods*, 1983-present.
9. Consulting Editor, *IEEE Trans. on Automatic Control*, 1985.
10. Member of Editorial Board, *Bilkent University Lecture Series*, Bilkent University, Turkey, 1988-present.
11. Member of Editorial Board, *International Journal of Mathematics and Computation in Control, Systems, and Signal Processing*, (Kluwer Publishing Co.), 1990-present.
12. Member of Editorial Board, *Journal of Systems and Control Engineering Proceedings, Part I, Proceedings of Institution of Mechanical Engineers, UK (Professional Engineering Publishing Co.)*, 1998-2004.

### **Board of Directors:**

1. Director of Electrical Engineering Consociates Ltd., Toronto, 1977-1982; 1984-2004.
2. Director of IEEE Control Systems Society Magazine, 1980-1982.

### **Biographical Reference Book Listings:**

1. Who's Who in the World (since 1980).
2. Who's Who in America (since 1979).
3. Men of Achievement (since 1978).
4. Canadian Who's Who (since 1978).
5. Dictionary of International Biography (since 1977).
6. American Men and Women of Science (since 1976).
7. International Who's Who in Intellectuals (since 1977).
8. International Who's Who in Education (since 1980).
9. Who's Who in Engineering (since 1978).
10. Who's Who in the Commonwealth (since 1981).
11. Who's Who in Canada (since 1981).
12. International Who's Who in Engineering (since 1981).
13. Who's Who in the East (since 1981).
14. International Book of Honor (since 1981).
15. 5000 Personalities of the World (since 1984).
16. Biography Fame International (since 1985).
17. International Directory of Distinguished Leadership (since 1985).
18. Who's Who in Technology (Since 1988).
19. Who's Who in Canadian Engineering (since 1991).
20. The International Who's Who (since 1993).
21. World's Who Who (since 2008).

### **Best Paper Awards, etc.:**

1. The paper: Wang, S.H., Davison, E.J., "A Minimization Algorithm for the Design of Linear Multivariable Systems", *IEEE Trans. on Automatic Control*, vol. AC-18, no. 3, June 1973, pp. 202-225, was nominated for Best Paper Award and chosen for honourable mention amongst the papers published in the *IEEE Trans. on Automatic Control*, vol. AC-18 (1973) and vol. AC-19 (1974).
2. The papers: Davison, E.J., "The Robust Decentralized Control of a General Servomechanism Problem", *IEEE Trans. on Automatic Control*, vol. AC-21, no. 1, Feb. 1976, pp. 14-24 and Davison, E.J., "The Robust Control of a Servomechanism Problem for Linear Time Invariant Multivariable Systems", *IEEE Trans. on Automatic Control*, vol. AC-21, no. 1, Feb. 1976, pp. 25-34, were nominated for Best Paper Award amongst the papers published in the *IEEE Trans. on Automatic Control*, vol. AC-20 (1975) and vol. AC-21 (1976), and also were nominated for Best Paper Award amongst the papers published in vol. AC-21 (1976) and vol. AC-22 (1977).
3. The paper: Davison, E.J., Taylor, P.A., Wright, J.D., "On the Application of Tuning Regulators to Control a Commercial Heat Exchanger", *IEEE Trans. on Automatic Control*, vol. AC-25, no. 3, June 1980, pp. 361-375, was chosen for the Outstanding Best Paper Award amongst the papers published in the *IEEE Trans. on Automatic Control*, vol. AC-24 (1979) and vol. AC-25 (1980).

4. The papers: Wang, S.H., Davison, E.J., "On the Stabilization of Decentralized Control Systems", *IEEE Trans. on Automatic Control*, Oct. 1973, vol. AC-18, no. 5, pp. 473-478; and Davison, E.J., Wang, S.H., "New Results on the Controllability and Observability of General Composite Systems", *IEEE Trans. on Automatic Control*, Feb. 1975, vol. AC-20, no. 1, pp. 123-128 have been selected for inclusion in a volume of reprints of "papers of significance" in *The World of Large Scale Systems* (editors: Palmer, J.D., Saeks, R.), IEEE Press, October 1982.
5. A workshop entitled "Davison Regulator from A to Z", June 11-25, 1979 (Kaczorek, T. - organizer) was held in Wilga, Poland sponsored by the Technical University of Warsaw, Poland.
6. The paper: Davison, E.J., "A Method for Simplifying Linear Dynamic Systems", *IEEE Trans. on Automatic Control*, vol. AC-11, no. 1, 1966, pp. 93-101, has been identified as being one of the most cited items in its field according to data taken from *Science Citation Index (SCI)*, and has appeared in the Citation Classics section of *Current Contents (CC): Engineering, Technology and Applied Science*, April 25, 1983, vol. 14, no. 17, p. 20.
7. The paper: Davison, E.J., Ferguson, I., "The Design of Controllers for the Multivariable Robust Servomechanism Problem Using Parameter Optimization Methods", *IEEE Trans. on Automatic Control*, vol. 26, no. 1, 1981, pp. 93-110 has been selected for inclusion in a volume of reprints of "papers of significance" in *Robust Control* (editor: Dorato, P.), IEEE Press, 1988. In the same volume of reprints, it is mentioned the "the term 'robust control' was first introduced by Davison". Twelve papers authored by Davison were listed in this volume.
8. In the review article: "Control Theory 1984-1986: A Progress Report from IFAC's Technical Committee on Theory" (ed: L. Ljung), *Automatica*, vol. 24, no. 4, July 1988, pp. 573-583, the papers [229], [237], [239] were reported as being papers of significance.
9. The paper: Miller, D.E., Davison, E.J., "An Adaptive Controller Which Provides Lyapunov Stability", *1988 IEEE Control and Decision Conference*, Austin, Dec. 1988, pp. 1934-1939, obtained an award certificate (honourable mention) for the CDC Best Paper Award, Student Competition.
10. The papers: Miller, D.E., Davison, E.J., "On Necessary Assumptions in Continuous Time Model Adaptive Control", *1989 IEEE Control and Decision Conference*, Tampa, Dec. 1989, pp. 1573-1578 and Qiu Li, Davison, E.J., "A Unified Theory for the Stability Robustness of Polynomials in a Convex Set", *1989 IEEE Control and Decision Conference*, Tampa, Dec. 1989, pp. 1902-1907 obtained an award certificate (honourable mention) for the CDC Best Paper Award, Student Competition.
11. The paper: Qiu Li, Davison, E.J., "The Pointwise Gap Metric on Transfer Functions", *1990 IEEE Control and Decision Conference*, Hawaii, Dec. 1990, pp. 2431-2436 obtained an award certificate (honourable mention) for the CDC Best Paper Award, Student Competition.
12. The paper: Qiu Li, Davison, E.J., "A New Method for the Stability Robustness Determination of State Space Models with Real Perturbations", *27th IEEE Control and Decision Conference*, Dec. 1988, pp. 538-543 has been selected for inclusion in a volume of reprints of "papers of significance" in *New Advances in Robust Control* (editors: Dorato, P., Yedavalli, R.K.), IEEE Press, Dec. 1990, Paper #1.22, pp. 125-130.
13. The papers: Miller, D.E., Davison, E.J., "On Necessary Assumptions in Continuous Time Model Reference Adaptive Control", *Proc. of 28th IEEE Control and Decision Conference*, Dec. 1989,

pp. 14-19, and Miller, D.E., Davison, E.J., "An Adaptive Controller Which Provides Lyapunov Stability", *IEEE Trans. on Automatic Control*, vol. 34, no. 6, June 1989, pp. 599-609 have been selected for inclusion in a volume of reprints of "papers of significance" in *Advances in Adaptive Control* (editors: K.S. Narendra, R. Ortega, P. Dorato), IEEE Press, June 1991, section 1.2, pp. 14-19 and section 1.3, pp. 20-30, respectively.

14. In the Survey Paper: Syrmos V.L., Abdallah C.T., Dorato P., Grigoriadis K., "Static Output Feedback - a Survey", *Automatica* vol. 33, No.2, 1997, pp 125 - 137, the papers [1],[48],[60],[82],[86],[118],[170] were included as being papers of significance.
15. The paper: Qiu Li, Bernhardson, B., Rantzer, A., Davison, E.J., Young, P.M., Doyle, J.C., "A Formula for Computation of the Real Stability Radius" was selected for honorable mention in the SIAM Activity Group on Linear Algebra Prize, November 1, 1997.
16. An international workshop entitled: "Recent Advances in Control" was held at the Fields Institute, University of Toronto, on June 26-28, 1998 in honour of E.J. Davison's 60th Birthday; the proceedings have been published in *Topics in Control and Its Applications*, Springer-Verlag (editors: L. Qiu, D. Miller), ISBN 1-85233-150-x, 1999. A dinner celebration was held in honour of E.J. Davison's 65th Birthday at the IEEE Control and Decision Conference, Maui, Hawaii, Dec 9 - 12, 2003.

### **Popular Press Description of Research:**

1. "Computer Model of the Cell", *Science Dimension*, vol. 6, no. 3, 1974, pp. 28-30.
2. Hutchinson, G., "Science Eye in Ottawa", *Canadian Research and Development*, Jan.-Feb. 1974, p. 54.
3. "The Computer Cell", *Time Magazine*, Oct. 7, 1974, pp. 66-67.
4. Campbell, W., "Edward Davison: Programming the War Against Cancer", *Macleans Magazine*, March 1975, p. 9.
5. "Canadian Scientist Davison will discuss Cell Behaviour in Lecture", *University of Connecticut Chronicle*, April 15, 1976, p. 6.

### **Research:**

1. Total number of publications = 510  
Number of papers published in journals, etc. with a referee review system = 499

### **Graduate Students Theses Supervised:**

#### **Ph.D. Theses**

1. Boulton, P.I.P., "Smearing techniques in pattern recognition", 1966.
2. Quintana, V.H., "Some numerical methods for solving optimal control problems", 1970.
3. Chow, S-G., "Perfect real model following in linear time-invariant systems", 1976.
4. Goldenberg, A., "On the structure of the linear multivariable servomechanism synthesis problem", 1976.
5. Kaltenbach, M., "Modelling and control of traffic methods", 1976.
6. Tripathi, N.K., "The optimal decentralized control of a large electric power system: automatic generation control", 1977.

7. Gesing, W., "Sequential stability and optimization of large scale decentralized systems", 1978.
8. West-Vukovich, G.S., "The decentralized control of large flexible space structures", Sept. 1983 (with P. Hughes).
9. Scherzinger, B.M., "Design of servomechanism controllers for exact and approximate error regulation", Oct. 1983.
10. Solomon, A., "On the design of controllers for certain classes of unknown multivariable systems", June 1986.
11. Vaz, A., "Modularity in the decentralized control of large scale systems", Oct. 1987.
12. Zhang Hongyi, "Structural properties of decentralized and hierarchical control systems and numerical problems in identification of large scale systems", Feb. 1989 (with Wen Chuanyuan), Beijing Institute of Aerospace and Astronautics (BIAA), Beijing, China.
13. Chang, T.N., "The decentralized control of large scale descriptor systems", July 1989.
14. Miller, D.E., "Adaptive control of uncertain systems", Oct. 1989.
15. Qiu Li, "Tools for quantitative stability robustness analysis", Sept. 1990.
16. Chang, M., "Adaptive switching control applied to multivariable systems", Jan. 1997.
17. Aghdam, A.G., "Control of decentralized systems using switching methods", July. 2000.
18. Ben Jemaa L., "Performance limitations in the robust servomechanism problem for discrete and sampled-data systems", Dec. 2000.
19. Hu Guangdi, "Robustness measures for linear time-invariant time-delay systems", Sept. 2001.
20. Milman Ruth, "Speedup for the quadratic programming problem and other issues in Model Predictive Control", June 2004.
21. Khatir Maziar, "On the decentralized control of a platoon of autonomous vehicles", Dec. 2005.
22. Roszak Bartek, "Linear-Time Positive Systems: Stabilization and the Servomechanism Problem", June 2009.
23. Simon Sai-Ming Lam, "Real Robustness Radii and Performance Limitations of LTI Control Systems", Nov. 2010.
24. Samuel Tien-Chieh Huang, "Fault Tolerant Control of Large Flexible Space Structures under Sensor and Actuator Failure", Jan. 2013.

### **M.A.Sc. Theses**

1. Alas, R., "Phase-state representation and numerical optimization of high-order control systems", 1966.
2. Homonich, H.P., "Simplification of large nonlinear dynamic systems", 1966.
3. Cowan, K.C., "Stability analysis of nonlinear autonomous systems by numerical techniques", 1967.
4. Deodhar, A.N., "Application of describing functions in systems with multi-nonlinearities", 1967 (University of California, Berkeley, CA).
5. Patel, B.K., "A Lyapunov function for certain classes of systems", 1967 (University of California, Berkeley, CA).
6. Goldenberg, R., "A design technique for the incomplete state feedback problem", 1967 (University of California, Berkeley, CA).
7. Ragetly, P.R., "Multivariable time optimal digital control", 1967 (University of California, Berkeley, CA).
8. Trivedi, S., "On the stability of linear discrete systems", 1967.
9. Chadha, K.J.S., "On the control of a large chemical plant", 1969.
10. Levytsky, Y., "The optimal control of some special classes of equivalent nonlinear systems", 1969.

11. Constantinescu, D., "A describing function technique for stability studies of systems with multiple nonlinearities", 1969.
12. Kurak, E.M., "Numerical calculation of the Lyapunov functions", 1969.
13. Seugnet, J.M., "Deterministic intercept problems in differential games", 1969.
14. Kunze, E.G., "Some sufficient conditions for the global and local controllability of nonlinear time-varying systems", 1969.
15. Singh, H.H., "A study of some high gain adaptive control systems", 1969.
16. Phillips, J.L., "An approach to the incomplete state feedback problem", 1969.
17. Chow, S-G., "Integral feedback control of linear constant systems subject to constant disturbances", 1971.
18. Garnett, G.A., "A numerical method for stabilizing and minimizing the dominant time constant of time invariant linear systems subject to incomplete state feedback", 1971.
19. Pemberton, K.G., "Simplification of large linear dynamic systems", 1972.
20. Wong, P., "A new algorithm for minimizing a function of many variables", 1972.
21. Cross, W.G., "An algorithm for the computer simulation of large dynamic systems composed of interconnected subsystems", 1973.
22. Chan, H.K., "Approaches to incomplete state feedback problems with model reduction", 1974.
23. Gesing, W.S.J., "The sequential linear regulator problem", 1974.
24. Tsai, D.T-J., "An algorithm for obtaining the Hessenberg form of large sparse matrices", 1978.
25. Gonzalez-Hernandez, L.A., "Applications of tuning regulator theory to design servomechanism controllers for some operating multivariable systems", 1979.
26. Ferguson, I., "The design of controllers for the multivariable robust servomechanism problem using parameter optimization methods", 1980.
27. Greszczuk, R.F., "A mathematical model of the control of respiration which considers the effects of exercise", June 1981.
28. Copeland, B., "Multiloop robust control system design", July 1981 (with H. Smith).
29. Chang, T., "Design of decentralized controllers for the robust servomechanism problem", April 1982.
30. Marler, B.W., "Microprocessor control of multivariable systems using tuning regulator theory", April 1983.
31. Patel, P., "The design of controllers for the multivariable robust servomechanism problem with periodic reference and disturbance signals", Sept. 1984.
32. Dharna, H.S., "Application of decoupling control to robotic manipulators", Jan. 1985 (with A. Goldenberg).
33. Baker, W.K., "On the identification of linear time invariant discrete systems given plant records of finite length and limited accuracy", July 1986.
34. Miller, D.E., "Self-tuning controllers for unknown stable linear systems", July 1986.
35. Qiu, Li., "Robust control of linear multivariable systems with gain perturbations", Nov. 1986.
36. Jian Jiao, "Multivariable controller design for systems with time delays", Oct. 1988.
37. Derventzis, C., "Robust Motion/Force Control of Cooperative Multiple-Arm Systems", Jan. 1991.
38. Vigneron, P.J., "Robust Control and Learning Control Applied to a Flexible Beam", Aug. 1991.
39. Yanovski, G., "Experimental Analysis of a Robust Centralized/Decentralized Controller for Robotic Manipulators", Sept. 1991.
40. Tyagi Rajesh, "Control of PH in a Continuous Stirred Tank Reactor", June 1992.

41. Ben Jemaa, Lamia, "The 'Perfect' Robust Servomechanism Control Problem for Discrete Systems", April 1993.
42. Chang, M., "Adaptive Control Applied to Unmodelled Multivariable Systems", April 1993.
43. Xing, Shao-Xi, "Control of Nonlinear Systems for the Servomechanism Problem", Jan. 1994.
44. Liu, Yong, "Adaptive Control Achieving Arbitrary Good Transient and Steady-State Response for MIMO Systems", Jan. 1994.
45. Yip, Sam, "Development and Implementation of a Real-Time Control Software Package", Sept. 1996.
46. El-Hage, Wassim, "Control of a hydraulic experimental system (MARTS) using the QNX operating system", (M.Eng), April. 2000.
47. Liu, Weixuan, "Multivariable servomechanism controller design of web-handling systems", April. 2000.
48. Lidstone, Charles, "The gimballed helicopter testbed: design, build, and validation", March. 2003.
49. Lam, Simon, "Real Stability and Stabilizability Radii of the Multi-Link Inverted Pendulum", July. 2005.
50. Ching, ShiNung, "Control of LTI Systems with Sudden Changes using Adaptive Control", July. 2005.
51. Wang, William S-W, "Controller Design of Multivariable Linear Time-Invariant Unknown Systems" Sept. 2011.