

# DR. FAYEZ GEBALI RESUME

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## 1 Personal Information

Canadian  
Married with four children

## 2 Degrees

Degree	Field	Institution	Year Granted
Ph.D.	Electrical Engineering	University of British Columbia	1979
B.Sc. (Hon.)	Applied Mathematics	Ain Shams University	1974
B.Sc. (Hon.)	Electrical Engineering	Cairo University	1972

## 3 Areas of Expertise

**VLSI Design:** System-on-chip (SoC) desing, VHDL design for synthesis using FPGAs, Mapping parallel algorithms onto processor arrays, reconfigurable computing.

**Processor Array Design:** Developed two formal techniques for implementing parallel DSP algorithms of any dimension, e.g. Video data compression using motion estimation, digital filters, multirate filters, decimators and interpolators.

**Algorithms for Computer Arithmetic:** Developed HCORDIC, a high-performance algorithm for elementary function evaluation (trigonometric, hyperbolic, logarithm, division). This algorithm works for fixed as well as floating point arithmetic and converges faster than other techniques.

**Hardware for Computer Arithmetic:** Developed RIPP the Recursive Inner-Product Processor evaluates repeated fixed point multiply/accumulate operations with speed set by one inverter delay irrespective of the number of bits of a word. This is used in digital filters and data compression.

**Merged Multiply/Accumulate Structures:** Developed several fast multiply accumulate structures that extensively use carry-save arithmetic for digital filters, motion estimation, etc.

**Network Processor Architecture Design:** Reconfigurable and merged architectures for data encryption, spam filtering, and deep packet classification.

**Computer Communication Hardware:** Developed the Virtual Routing and Virtual Queuing (VRQ) switch for packet switching. The switch combines all the advantages of previous switches.

**Computer Communication Algorithms:** Developed an optimized packet scheduling technique based on the transportation problem optimization technique. The scheduler optimizes bandwidth and delay QoS for the service classes.

**Communication System Modeling:** Developed models and techniques for low power wireless MAC protocols. Current research involves sensor networks, IEEE 802.11 PCF and DCF functionalities and optimizing backoff strategies.

## 4 Work Experience

2002–Present	Associate Dean of Engineering (undergraduate programs), University of Victoria.
1991–Present	Professor of Computer Engineering, University of Victoria.
1986–1987	Associate Professor of Computer Engineering, University of Victoria.
1984–1986	Assistant Professor Electrical Engineering
1983–1984	Research Associate University of Waterloo
1979–1982	Research Associate Simon Fraser University
1975–1979	Research Assistant University of British Columbia
1972–1979	Instructor Cairo University

## 5 Teaching Experience

- CENG 441 Design of Digital and VLSI Systems
- CENG 465/ ELEC 543 Digital VLSI Systems
- CENG 461/ ELEC 514 Analysis and Design of Computer Communication Networks
- ELEC 642 Mapping DSP Algorithms onto Processor Arrays
- ELEC 544 Analog and Neural Systems
- ELEC 499, CENG 499 Design Project
- ELEC 415 VLSI Technology

- ELEC 412 Electronic Devices 2
- ELEC 320 Electronic Devices 1
- ELEC 250 Linear Circuits 1
- ELEC 220 Electrical Properties of Materials

## 6 SCHOLARSHIPS, FELLOWSHIPS, HONORS, AND AWARDS

Year(s)	Amount	Source	Title
2004		Faculty of Engineering	Faculty of Engineering Award for Teaching Excellence
2003		Faculty of Engineering	Nominated for Faculty of Engineering Award for Teaching Excellence
Feb. 2003		Faculty of Engineering	Invited by Engineering Graduating Class to give a speech at their Graduation Banquet
Aug. 2002		Faculty of Engineering	Commendation from the Chair on my course evaluations
Dec. 2001		ISSPIT'01	Certificate of Appreciation from the 1 <sup>st</sup> IEEE Symposium on Signal Processing and Information Technology (ISSPIT'01)
Oct. 2001		Faculty of Engineering	Commendation from the Dean on my course evaluations
June 2001		Faculty of Engineering	Commendation from the Chair on my course evaluations
Sep. 1999		Faculty of Engineering	Commendation from the Dean on my course evaluations
June 1999		Faculty of Engineering	Commendation from the Dean on my course evaluations
Sep. 1998		Faculty of Engineering	Commendation from the Chair on my course evaluations
Sep. 1986		Faculty of Engineering	Elected Best Teacher by undergraduate students
Apr. 1986		Faculty of Engineering	Commendation from President of Faculty Association on my Best Teacher Award

## SCHOLARSHIPS, FELLOWSHIPS, HONORS, AND AWARDS (Continued)

Year(s)	Amount	Source	Title
Oct. 1985		Faculty of Engineering	Commendation from the Chair on my course evaluations
Mar. 1985		Faculty of Engineering	Commendation from the Chair on my course evaluations
1976–1979	\$7000 (p.a.)	NSERC	Post Graduate Scholarship
1975–1979	\$3,000 (p.a.)	University of British Columbia	Research Assistantship
1974–1976	\$3,500 (p.a.)	University of British Columbia	President’s Award
1967–1974	L.E. 120 (p.a.)	Egyptian Government	Outstanding Student Academic Award

## 7 Professional Contributions

Member of University of Victoria Senate

Committee Chair of Faculty of Engineering Curriculum, Bachelor of Engineering, Software Engineering Program Board.

Chair of IEEE International Symposium on Signal Processing and Information Technology (IS-SPIT 2006)

Co-Chair of IEEE Pacific Rim Conference on Communications, Computers, and Signal Processing (PACRIM’05)

Chair of IEEE Pacific Rim Conference on Communications, Computers, and Signal Processing (PACRIM’03)

Member of Technical Committee of IEEE International Symposium on Signal Processing and Information Technology (ISSPIT 2001, 2002, 2003, 2004, 2006)

Publication Chair of IEEE Pacific Rim Conference on Communications, Computers, and Signal Processing (PACRIM’05)

Member of Technical Committee of IEEE Pacific Rim Conference on Communications, Computers, and Signal Processing (1989, 1997, 2003, 2005)

Member of Technical Program Committee IEEE International Symposium on Circuits and Systems, 1989.

Member of Technical Committee of International Conference on Microelectronics (ICM)

## **8 Membership in Professional Organization**

Association of Professional Engineers and Geoscientists of British Columbia, Member, 1985–present.

Association of Professional Engineers of Egypt, Member, 1972–present.

Canadian Society of Information Theorists (CSIT), Member, 2000–present,

IEEE “Institute of Electrical and Electronics Engineers”, Member, 1976–82, Senior Member, 1983–present.

IEEE Computer Society, Member, 1993, 2002–present

IEEE Signal Processing Society’s Technical Committee on Signal Processing Education, Member, 2001–present

ISCA “International Society for Computers and Their Applications”, Member, 2005.

## **9 Publications**

4 Books

6 Chapters in Books

62 Refereed Journals

117 Refereed Conferences

19 Technical Reports

### **9.1 Books**

1. Gebali, F., ”Computer Communication Networks: Analysis and Design, Third Edition”, Northstar Digital Design Inc., Victoria, 2005.
2. F. Gebali, “IEEE Pacific Rim Conference on Communications, Computers and Signal Processing (PACRIM’03) Conference Proceedings”, vol. 1 and 2, Editor, August 28–30, 2003.

3. F. Gebali and E. Abdel-Raheem, Eds., “International Symposium on Signal Processing and Information Technology”, Cairo Egypt, December, 2001.
4. Gebali, F., “Linear Circuits”, Northstar Digital Design Inc., Victoria, 2001.

## 10 Graduate Student Supervision

10 Ph.D. students currently being supervised

9 Ph.D. students graduated

16 M.A.Sc. students graduated

2 M.Eng. students graduated

9 Senior undergraduate student project supervision

Table 1: Current Graduate Student Supervision

Start Date	Student	Program	Comment
2005	H. Elmiligy	Ph.D.	Co-supervised with Dr. El-Kharashi
2005	A. Abdullah	Ph.D.	
2005	M. Mohamed	Ph.D.	
2004	K. Al-Muzaini	Ph.D.	
2004	M. Marsono	Ph.D.	
2003	A. Amer	Ph.D.	
2003	K. Khayyat	Ph.D.	Co-supervised with Dr. El-Kharashi
2003	O.Mohamed	Ph.D.	
2003	M. Fayed	Ph.D.	
2001	N. Rafiq	Ph.D.	