



## CURRICULUM VITAE

NAME : PAUL DEVASAHAYAM MANUEL

OCCUPATION : Professor,  
Kuwait University, Kuwait

QUALIFICATION : 1992 ~ 1996 Ph.D.  
University of Newcastle, Australia  
1991 ~ 1992 M.S.  
University of Saskatchewan, Canada  
1981 ~ 1986 Ph.D.  
Indian Institute of Technology, India

RESEARCH INTERESTS : Information Systems, Algorithms, Cheminformatics,

ADMINISTRATIVE SKILLS : ABET Accreditation Process.

SOFTWARE SKILLS : Enterprise Resource Planning (ODOO).  
Machine Learning - Python

EDITORIAL BOARD : 1. International Journal of Cloud-Computing and Super-  
Computing (IJCS)  
2. Pure and Applied Mathematics Journal  
3. International Journal of Extreme Automation and  
Connectivity in Healthcare (IJEACH)

AREA EXPERT : IEEE ComSec eHealth Technical Committee (TC)

AWARD : 2010 – 2011 **Best Teacher Award**  
Kuwait University, Kuwait.

2008 – 2009 **Distinguished Lecturer Award**  
Kuwait University Center of Information Systems

2002 – 2003 **Industry Relationship Award**, KFUPM,  
Saudi Arabia.

The most significant accomplishment is that I am listed in the 'World's Top 2% Scientist 2022' as one of the world's most influential scientists, which was released by Stanford University and Elsevier Foundation.

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## CV in Brief

I am in the Top 2% Most Influential Scientists in the world listed by Scopus and Stanford University:

<https://elsevier.digitalcommonsdata.com/datasets/btchxktzyw/4>

According to Clarivate Analytics, the total impact factors of all my papers exceeds 200.

[https://www.researchgate.net/profile/Paul\\_Manuel2](https://www.researchgate.net/profile/Paul_Manuel2)

<https://scholar.google.com.au/citations?user=ip2nY0IAAAAJ&hl=en>

<https://kuniv.academia.edu/PaulManuel>

<https://www.mendeley.com/research-papers/?query=paul+manuel>

### Journal Papers - 101

According to Web of Science,

|                                |               |
|--------------------------------|---------------|
| SCI (ISI) Indexed              | – 81 Papers   |
| Scopus Indexed                 | – 20 Papers   |
| Number of Q1/Q2 Journal papers | – 60+ Papers  |
| The Net Impact Factor          | – 200+ Points |

According to Google Scholar,

<https://scholar.google.com/citations?user=ip2nY0IAAAAJ&hl=en>

|           |      |
|-----------|------|
| Citations | 2411 |
| h-index   | 28   |
| i10-index | 61   |

According to Scopus,

<https://www.scopus.com/authid/detail.uri?authorId=56224800200>

|           |      |
|-----------|------|
| Citations | 1311 |
| h-index   | 21   |

### Conference Papers - 62

### Journal Editors - 3 journals

### Research Projects:

|                |                           |
|----------------|---------------------------|
| KU Projects    | – 11 + 2 ongoing projects |
| KFAS Project   | – 2                       |
| UNESCO Project | – 1                       |

## ACCREDITATION EXPERTISE

|                       |  |
|-----------------------|--|
| Sept 2013 ~ Till date | Department Accreditation Coordinator<br>Department of Information Science<br>College of Computing Science & Engineering,<br>Kuwait University, Kuwait  |
| Mar 2009 ~ Sept 2012  | Director<br>Office of Assessment and Accreditation<br>College for Women, Kuwait University, Kuwait   |
| Aug 2009 ~ Dec 2010   | ABET Accreditation of ISC Program<br>Department of Information Science<br>College of Computing Science & Engineering,<br>Kuwait University, Kuwait     |
| Aug 2003 ~ Dec 2004   | ABET Accreditation of ICS Program<br>Department of Information and Computer Science<br>King Fahd University of Petroleum and Minerals,<br>Saudi Arabia |

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## EDUCATION

|             |              |  |
|-------------|--------------|--|
| 1992 – 1996 | <b>Ph.D.</b> | Faculty of Engineering, University of Newcastle,<br>Newcastle, Australia<br>Major: Computer Science & Engineering<br>Thesis: Sequential and Parallel Algorithms. |
| 1991 – 1992 | <b>M. S.</b> | Faculty of Engineering, University of Saskatchewan,<br>Saskatoon, Canada<br>Major: Computer Science<br>Thesis: Sequential and Parallel Algorithms.               |
| 1981 – 1986 | <b>Ph.D.</b> | Indian Institute of Technology, Madras, India<br>Thesis: High speed computing.   |

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## **WORK EXPERIENCE**

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|---------------------------|---|
| Sep 2019 ~ May 2020       | Acting Vice Dean of Academic Affairs<br>College of Life Sciences,<br>Kuwait University, Kuwait  |
| Nov 2011 ~ Till date      | Professor in Information Science<br>Dept of Information Science<br>College of Computing Science & Engineering,<br>Kuwait University, Kuwait |
| Aug 2014 ~ Aug 2019       | Conjoint Professor<br>Faculty of Science and Information Technology<br>University of Newcastle<br>Newcastle, NSW, Australia                 |
| Sept 2017 ~ Aug 2018      | Director<br>MSIT<br>College of Graduate Studies, Kuwait University, Kuwait  |
| Sept 2015 ~ Till Date     | Coordinator<br>Assessment and Accreditation   |
| Nov 2011 ~ Jun 2015       | Director<br>MSIT<br>College of Graduate Studies, Kuwait University, Kuwait  |
| March 2009 ~ Sept 2012    | Director<br>Office of Assessment and Accreditation<br>College for Women, Kuwait University, Kuwait  |
| March 2005 ~ Nov 2011     | Associate Professor in Information Science<br>Dept of Information Science<br>College for Women, Kuwait University, Kuwait                   |
| Sept 2005 ~ Sept 2007     | Acting Chairman<br>Dept of Information Science<br>College for Women, Kuwait University, Kuwait  |
| Sept 2001 ~ February 2005 | Associate Professor<br>Department of Information and Computer Science<br>King Fahd University of Petroleum and Minerals,<br>Saudi Arabia    |
| June 2000 ~ Sept 2001     | Project Manager<br>BITECH Software, Chennai, India  |
| Sept 1998 ~ June 2000     | Associate Professor, Department of<br>Computer Science, Applied Science University,<br>Jordan.  |

January 1996 ~ Sept 1998

Professor and Head,  
Dept of Computer Applications  
Madurai Kamaraj University, India.

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**WORKSHOP AND TRAINING**

- 6 - 8 October 2013                      Shaping the future of mathematics and science foundation, 6<sup>th</sup> inGenious workshop in collaboration with the EPCA 47<sup>th</sup> Annual Meeting, Berlin, Germany.
- 22 - 26 March 2011                      Advanced training on Grid Computing organized by UNESCO-HP, HP South Africa, Pretoria, South Africa.
- May 2010                                      “Training Course on Post Graduate Career”,  
AAIM International for Training and Development, Kuwait.
- 14 – 18 Dec 2009                      “UNESCO-HP training in Grid Computing”, HP South Africa,  
Johannesburg, South Africa
- 15 – 19 March 2009                      “Workshop on Bioinformatics”, Kuwait University, Kuwait

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## **KU RESEARCH PROJECTS**

### **Ongoing Projects:**

Title of the Project : “A new metric to measure the performance of fixed interconnection networks”  
Funding Agency : FI 01/22, Kuwait University, Kuwait  
Project Fund : KD. 3000  
Duration : 7 October 2022 – 6 September 2023  
Status : ongoing  
Investigators : Paul Manuel, Sandi Klavzar and Bosjan Bresar

Title of the Project : “Mulder meta-conjecture and edge general position problem”  
Funding Agency : FI 02/21, Kuwait University, Kuwait  
Project Fund : KD. 3250  
Duration : 10 Nov 2021 – 9 Nov 2022  
Status : ongoing  
Investigators : Paul Manuel, Sandi Klavzar and R Prabha

### **Completed Projects:**

Title of the Project : “Geodesic-transversal problem in large-scale networks”  
Funding Agency : QI 01/20, Kuwait University, Kuwait  
Project Fund : KD. 4000  
Duration : 8 Feb 2021 – 7 Feb 2022  
Status : completed - Rated as “Excellent”.  
Investigators : Paul Manuel, Sandi Klavzar and Bosjan Bresar

Title of the Project : “Computational complexity of isometric path partition problems”  
Funding Agency : QI 02/18, Kuwait University, Kuwait  
Project Fund : KD. 3000  
Duration : Dec 2018 – Dec 2019  
Status : completed – 90.53%  
Investigators : Paul Manuel

Title of the Project : “Graph Theory General Position problem with Applications”  
Funding Agency : QI 02/17, Kuwait University, Kuwait  
Project Fund : KD. 3500  
Duration : Dec 2017 – Dec 2018  
Status : completed – 92.63% - Rated as “Excellent”.  
Investigators : Paul Manuel and Sandi Klavzar

Title of the Project : “Geodetic problems with application in social networks”  
Funding Agency : QI 01/16, Kuwait University, Kuwait  
Project Fund : KD 3500.  
Duration : May 2016 – May 2017.  
Status : completed - 84.21% - Rated as “Very Good”.  
Investigators : Paul Manuel and Sandi Klavzar

Title of the Project : “Computational aspects of topological indices of molecular graphs” (WI 05/11)  
Funding Agency : Kuwait University, Kuwait  
Project Fund : KD 2500.  
Duration : 1 October 2011 – 30 September 2012  
Status : Completed - Rated as “Good”.  
Investigators : Paul Manuel

Title of the Project : “A practical approach of trust management system for cloud environment” (WI 07/11)

Funding Agency : Kuwait University, Kuwait  
 Project Fund : KD 3100.  
 Duration : 16 March 2012 – 15 March 2013  
 Status : Completed - Rated as “Excellent”.  
 Investigators : Paul Manuel

Title of the Project : “Trust Monitoring System for Grid Computing” (WI 02/08)  
 Funding Agency : Kuwait University, Kuwait  
 Project Fund : KD 6850.  
 Duration : 30 April 2009 – 29 April 2010  
 Status : Completed - Rated as “Very Good”.  
 Investigators : Paul Manuel and Mostafa Abd-El Barr

Title of the Project : “Topological Properties of silicate networks” (WI 01/07)  
 Funding Agency : Kuwait University, Kuwait  
 Project Fund : KD 6844.  
 Duration : December 2007 – April 2009  
 Status : Completed - Rated as “Excellent”.  
 Investigators : Paul Manuel and Kalim Qureshi

Title of the Project : “Empirical study of task partitioning, scheduling and load balancing strategies for heterogeneous distributed data parallel applications” (SM02/07)  
 Funding Agency : Kuwait University, Kuwait  
 Project Fund : KD 1500.  
 Duration : June 2007 – June 2008  
 Status : Completed - Rated as “Good”.  
 Investigators : Kalim Qureshi and Paul Manuel

Title of the Project : “Knowledge Based E-Governance Using Neural Network” (WI 04/05)  
 Funding Agency : Kuwait University, Kuwait  
 Project Fund : KD 6000.  
 Duration : September 2006 – March 2007  
 Status : Completed - Rated as “Excellent”.  
 Investigators : Paul Manuel and Mostafa Abd-El Barr

#### **OTHER RESEARCH PROJECTS IN KUWAIT**

Title of the Project : “Nanotechnology-based interconnection networks”  
 UNESCO Ref Number is 3250039600 and KU Ref Number is XX06/09  
 Funding Agency : UNESCO-HP  
 Project Fund : US\$ 45, 000.  
 Duration : December 2009 – December 2012  
 Status : Completed  
 Investigators : Paul Manuel, Kalim Qureshi and Mohsen Guizani

Title of the Project : “Topological and physicochemical descriptors of Nano Structures”  
 Funding Agency : KFAS, Kuwait  
 Project Fund : KD 22000.  
 Duration : May 2013 – May 2014.  
 Status : completed - Rated as “Excellent”.  
 Investigators : Dr Thalaya Al-Fozan and Paul Manuel

Title of the Project : “Computational Chemical Graphs in Bioinformatics”  
 Funding Agency : Kuwait Foundation for the Advancement of Sciences (KFAS), Kuwait  
 Project Fund : KD 7, 500.

Duration : January 2010 – January 2011  
Status : Completed - Rated as “Very Good”  
Investigators : Ahmed Al-Kandari and Paul Manuel

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## **CONFERENCES ORGANIZED**

1. Convener, Technical Committee, 2nd International Conference on Computing Sciences and Engineering (ICCSE18), March 11-13, 2018, Kuwait University, Kuwait
2. Session Chair and Paper Presentation - 40 ACCMCC-2016, 12th — 16th December 2016, University of Newcastle, Australia. (<https://40accmcc.newcastle.edu.au/>)
3. Keynote Speaker - ICMCE 2016, 16th — 17th December 2016, VIT, Chennai, India (<http://chennai.vit.ac.in/files/icmce2016/>)
4. Program Committee, Distance in Graph 2016, 18 – 22, July 2016 in Ubud, Bali, 2016.
5. Program Chair, WORKSHOP ON UNESCO-HP BRAIN GAIN INITIATIVE, In Conjunction with: 2nd Kuwait Conf. on e-Services & e-Systems, Kuwait University, Kuwait, 5 – 7 April 2011
6. Joint Secretary, International Conference of Mathematics and Computer Science – ICMCS 2011, Chennai, India, January 7 – 8, 2011.
7. Joint Secretary, International Conference of Mathematics and Computer Science – ICMCS 2010, Chennai, India, February 5 – 6, 2010.
8. Session Chair, 5<sup>th</sup> IEEE GCC 2009 conference, Kuwait, March 16-19, 2009.
9. Co-chair, Technical Program Committee, ISTA 2009, Kuwait University, Kuwait.
10. Joint Secretary, International Conference of Mathematics and Computer Science – ICMCS 2009, Chennai, India, January 5-6, 2009.
11. Joint Secretary, International Conference of Mathematics and Computer Science – ICMCS 2008, Chennai, India, June 15-16, 2008
12. Member, 4<sup>th</sup> International Workshop on Graph labeling – IWOGL 2008, Harbin, China, January 7 – 10, 2008.
13. Joint Secretary, International Conference of Mathematics and Computer Science – ICMCS 2007, Chennai, India, March 1-3, 2007.
14. Keynote speaker, Workshop on Graph Theory, Chennai, India, December 18 – 19, 2007.
15. Member, Program Committee, AWOCA 2006, Kings Canyon, Australia 2006.
16. Member, Program Committee, AWOCA 2005, Ballarat, Australia 2005.
17. Member, Scientific Committee, ICICS 2004, KFUPM, Dhahran, Saudi Arabia, 2004.
18. Member, Program Committee, AWOCA 2003, Hunter Valley, Australia 2003.
19. Member, Program Committee, WICS – 2002, KFUPM, Dhahran, Saudi Arabia, 2002.

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## TEACHING

I believe in teaching courses which focus on state-of-the-art technology. Now I teach the following courses:

1. Enterprise Resource Planning (ERP)
2. Information Technology and Social Media
3. Internet of Things
4. Health Informatics
5. Cybersecurity

I have recently built a software lab and developed a Lab Manual for Enterprise Resource Planning.

**Students' Comments:** Here are some of the students' comments in the instruction evaluation. *“One of the best teachers ever”, “You are a great doctor”, “It is a privilege to study with Prof Paul Manuel”, “Prof Paul is an example of how to deal with students fairly and professionally”, “I learnt a lot from Prof Paul”.*

**Teaching Methodology:** I got the best teacher award in 2010. I always strive to be as helpful to the students as possible. I enjoy interacting with students, other academics and people in general. I am considered an “easily approachable teacher” in our department.

**ERP Expertise:** I am an expert in the software of Enterprise Resource Planning which is the backbone of Information Systems Curriculum. The SAP is the most expensive software and we use freeware ODOO in the lab.

**Availability:** Students do not need any appointments to meet me. I make it a point that I reply to each email of each student instantly. This is how I respect the students.

**Proactive Interests:** I always show keen interests in the expansion of the department and the college. I and Dr Kalim Qureshi have proposed a new undergraduate program “BS in IT Multimedia”.

My teaching experiences (at the undergraduate and graduate level) are:

1. Introduction to Software Engineering
2. Software Design (Rational suite)
3. Software Requirements Engineering (Rational suite)
4. Software Project Management
5. Web Services and Internet Technology – .NET Frameworks and J2EE
6. Computer Programming languages – C++, Java, C#
7. Parallel algorithms and Architecture
8. Computer Algorithms
9. Theoretical Computer Science
10. Discrete Structures
11. Database Systems
12. Health Informatics
13. Enterprise Resource Planning
14. Social Networks

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## PUBLICATIONS

### BOOKS CHAPTERS

- [1]. Paul Manuel, Macro and Micro Level Classification of social media Private Data, New Knowledge in Information Systems and Technologies, Advances in Intelligent Systems and Computing (AISC), Pages 853-866, volume 931, 2019, Springer Publications.  
**Springer, Germany**  
**Scopus Indexed**
- [2]. Belmir Patkovic, Kassem Saleh, and Paul Manuel, "SIMS: A Stakeholder Information Management System for Successful Projects", Advances in Intelligent Systems and Computing, pp 402-420, Volume 881, 2018, Springer.  
**Springer, Germany**  
**Scopus Indexed**
- [3]. R. Sundara Rajan, Indra Rajasingh, Paul Manuel, T. M. Rajalaxmi and N. Parthiban. *Embedding Circulant Networks into Butterfly and Benes Networks*, **Combinatorial Algorithms, Lecture Notes in Computer Science**, 2015  
**Springer, Germany**
- [4]. Paul Manuel, Indra Rajasingh, R. Sundara Rajan, N. Parthiban, T. M. Rajalaxmi, *A Tight Bound for Congestion of an Embedding*, **Algorithms and Discrete Applied Mathematics, Lecture Notes in Computer Science** Volume 8959, 2015, pp 229-237.  
**Springer, Germany**
- [5]. Paul Manuel, Indra Rajasingh, Bharati Rajan, and Joice Punitha, *Kernel in Oriented Circulant Graphs*, "**Lecture Notes in Computer Science**" Vol. 5874, pp. 396-407 (2009).  
**Springer, Germany.**
- [6]. Paul D. Manuel, Bharati Rajan, Indra Rajasingh, and Amutha Alaguvel. *Tree Spanners, Cayley Graphs, and Diametrically Uniform Graphs*, "**Lecture Notes in Computer Science**" Vol. 2880, pp. 334-345 (2003).  
**Springer, Germany.**

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### JOURNAL PUBLICATIONS

2023:

- [1]. Vijay N, Bharati R, and Paul Manuel, "A new bound for the crossing number of wrapped butterflies", **The International Journal of Nonlinear Studies**, Accepted, 2023.  
Scopus Indexed.
- [2]. Paul Manuel, Bostjan Bresar, Sandi Klavzar, "*The geodesic transversal problem on some networks*", **Journal of Computational and Applied Mathematics**, 42, Pages 59-72, 9 January 2023. DOI: 10.1007/s40314-023-02199-9  
**ISI Impact factor 2.872 (Q1)**  
**KU Project QI-01/20**

## 2022:

- [3]. Paul Manuel, Bostjan Bresar, Sandi Klavzar, “*Geodesic packing in graphs*”, 27 Oct 2022, Submitted to **Applied Mathematics and Computation**, <http://arxiv.org/abs/2210.15325>
- [4]. Paul Manuel, Sandi Klavzar, Prabha Kumar, and Andrew Arokiaraj, “*The geodesic cover problem for butterfly networks*”, <http://arxiv.org/abs/2210.12675>, 23 Oct 2022. Submitted to **Discussiones Mathematicae Graph Theory**.
- [5]. Paul Manuel, Sandi Klavzar, Prabha Kumar, “*Generalization of edge general position problem*”, **Journal of Applicable Analysis and Discrete Mathematics**, Revised, 2022  
**ISI Impact factor 1.238 (Q1)**  
**KU Project FI-02/21**
- [6]. Paul Manuel, Prabha Kumar, and Sandi Klavzar, “*Edge General Position Problem*”, **Bulletin of the Malaysian Mathematical Sciences Society**, 15 June 2022,  
DOI:<https://doi.org/10.1007/s40840-022-01319-8>  
**ISI Impact Factor is 1.397 (Q1)**  
**KU Project FI-02/21**
- [7]. Zainab AlMeraj, Ali K. Alenezi, Paul Manuel, “*An empirical investigation into organization cyber security readiness from the IT employee and manager perspectives*”, **An International Journal of Electronic Government**, 2021.  
DoI:10.1504/EG.2023.10042424  
**Scopus Impact Factor 1.64 (Q3)**
- [8]. Paul Manuel, Bostjan Bresar, Sandi Klavzar, “*The geodesic-transversal problem*”, **Applied Mathematics and Computation**, Volume 413, 126621, 15 January 2022.  
DOI: <https://doi.org/10.1016/j.amc.2021.126621>  
**ISI Impact Factor 4.397 (Q1)**  
**KU Project QI-01/20**

## 2021:

- [9]. Hawraa Aref Al-Mutawa and Paul Manuel, “*Human Resource Information System in Healthcare Organizations*”, **Intelligent Sustainable Systems**, Springer Nature, 2021. DOI: 10.1007/978-981-16-6369-7.  
**Springer, Germany**
- [10]. Sondos Yousef Alonaizi and Paul Manuel, “*IoT-based smart government enablers: An exploration of governments’ experiments*”, **IEEE Xplore**, Pages 58 - 64, 2021. DOI: 10.1109/WorldS451998.2021.9514061.  
**IEEE Publications.**
- [11]. R. Stalin Mary, and N. Parthiban, Indra Rajasingh and Paul Manuel, “*Optimal Layout of Recursive Circulant Graphs*”, **International Journal of Computer Mathematics:**

**Computer Systems Theory**, Volume 6, Issue 3, Page 209-219, August 2021. DOI: <https://doi.org/10.1080/23799927.2021.1963999>  
ISI Indexed and Scopus Indexed.  
**ISI Impact Factor: 0.253**

[12]. M. Keerthana<sup>1</sup>, B. Sivakumar and Paul Manuel, “*An Inventory System with Postponed and Renewal Demands*”, **International Journal of Systems Science: Operations & Logistics**, Pages 1-19, 2 Jan 2021. DOI: <https://doi.org/10.1080/23302674.2020.1864505>  
**ISI Impact Factor 6.547 (Q1)**

[13]. Paul Manuel, “*On the isometric path partition problem*”, **Discussiones Mathematicae Graph Theory**, Volume 41, Pages 1077-1089, 2021.  
DOI: <https://doi.org/10.7151/dmgt.2236>.  
**ISI Impact Factor 0.6 (Q2)**

## 2020:

[14]. Paul Manuel, Sandi Klavzar, Antony Xavier, Andrew Arokiaraj and Elizabeth Thomas, “*Strong geodetic problem in networks*”, **Discussiones Mathematicae Graph Theory**, Volume 40, Issue 1, pp 307- 322, 2020.  
**ISI Impact Factor 0.6 (Q2)**

## 2019:

[15]. Paul Manuel, “*Revisiting path-type covering and partitioning problems*”, arXiv:1807.10613 [math.CO], 25 Jul 2018.

[16]. Vijaya Natarajan, Bharati Rajan and Paul Manuel, “*A new bound for the crossing number of wrapped butterflies*”, arXiv:1907.06245 [Cornell University], 14 Jul 2019.

## 2018:

[17]. Ali AlEnezi, Zainab AlMeraj and Paul Manuel, “*Challenges of IoT based new generation smart-government*”, **Journal of Informatics and Mathematical Sciences**, Vol. 10, No. 3, pp. 533–544, 2018. DOI: 10.26713/jims.v10i3.1092.  
**ISI Emerging Sources Citation Indexed**

[18]. Paul Manuel, “*An efficient Hosoya Index Algorithm and its application*”, **International Journal of Computer aided Engineering and Technology**, 11(2), May 2018, DOI: 10.1504/IJCAET.2019.10018262  
**Scopus Impact Factor 2.03**

[19]. Sandi Klavžar, D. Azubha Jemilet, Indra Rajasingh, Paul Manuel, and N. Parthiban, “*General transmission lemma and Wiener complexity of triangular grids*”, **Applied Mathematics and Computation**, 338 (2018) 115–122.  
**ISI Impact Factor 4.397 (Q1)**

[20]. Paul Manuel and Sandi Klavzar, “*The graph theory general position problem on some interconnection networks*”, **Fundamenta Informaticae**, Volume 163, Issue 4, pp. 339-350, 2018. DOI 10.3233/FI-2018-1748

**KU Project QI 02/17**  
**Impact Factor is 1.333 (Q1)**

- [21]. Paul Manuel and Sandi Klavzar, “A general position problem in graph theory”, **Bulletin of the Australian Mathematical Sciences Society**, Volume 98, Issue 2, pp. 177-187, October 2018. DOI: <https://doi.org/10.1017/S0004972718000473>

**KU Project QI 02/17**  
**ISI Impact factor 0.622 (Q2)**

- [22]. Sandi Klavzar and Paul Manuel, “Strong geodetic problem in grid-like architectures”, **Bulletin of the Malaysian Mathematical Sciences Society**, Volume 41, Issue 3, pp 1671–1680, July 2018.

**ISI 2016 Impact Factor is 1.397 (Q1)**

## 2017:

- [23]. Paul Manuel, Sandi Klavzar, Antony Xavier, Andrew Arokiaraj and Elizabeth Thomas, “Strong edge geodetic problem in networks”, **Open Mathematics** (Formerly Central European Journal of Mathematics), Issue 1, Volume 15, pp 1225-1235, 2017.

**ISI Impact factor: 0.979**

## 2016:

- [24]. Paul Manuel, D. Antony Xavier, S. Kulandai Therese, and Andrew Arokiaraj, “A class of perfect domination problems on diamond lattices”, **International Journal of Pure and Applied Mathematics**, Volume 109, No. 7, 115-123, 2016.

**Scopus Impact Factor 0.325**

- [25]. Sandi Klavzar, Paul Manuel, MJ Nadjafi-Arani, R Sundara Rajan, Cyriac Grigorious, Sudeep Stephen, “Average distance in interconnection networks via reduction theorems for vertex-weighted graphs”, **The Computer Journal**, 59 (12), 1900-1910, 2016.

**ISI Impact factor 1.762 (Q1)**

- [26]. Mirka Miller, R. Sundara Rajan, R. Jayagopal, Indra Rajasingh and Paul Manuel, “A note on the Locating-Total Domination in graphs”, **Discussiones Mathematicae Graph Theory** Volume 37, Issue 3, 2017.

**ISI Impact Factor 0.6 (Q2)**

- [27]. Indra Rajasingh, Paul Manuel, N. Parthiban, D. Azubha Jemilet, and R. Sundara Rajan, “Transmission in Butterfly Networks”, **The Computer Journal**, Volume 59, Issue 8, Pages 1174–1179, 2016.

**ISI Impact factor 1.762 (Q1)**

## 2015:

- [28]. Indra Rajasingh, R. Sundara Rajan and Paul Manuel, “A Linear Time Algorithm for Embedding Christmas Trees into Certain Trees”, **Parallel Processing Letters**, Volume 25, Issue 04, December 2015.

**Scopus Impact Factor 0.499**

- [29]. R. Sundara Rajan, Indra Rajasingh, Paul Manuel, Mirka Miller and T. M. Rajalaxmi, “*Maximum Incomplete Recursive Circulants in Graph Embeddings*”, **Discrete Mathematics, Algorithms and Applications**, Volume 07, Issue 04, December 2015.  
<https://doi.org/10.1142/S1793830915500536>  
**Impact factor 0.796**
- [30]. R. Sundara Rajan, Paul Manuel and Indra Rajasingh, “*Embedding between Hypercubes and Hypertrees*”, **Journal of Graph Algorithms and Applications (JGAA)**, Vol. 19, no. 1, pp. 361-373, 2015  
**Scopus Impact Factor 0.759**
- [31]. Bader Ali, Abdullah Al Mutairi and Paul Manuel, “*Paired Domination Problems of Infinite Diamond Lattice*”, **Journal of Combinatorial Mathematics and Combinatorial Computing**, Volume 92, pp. 3-13, 2015  
**Scopus Impact Factor 0.546**
- [32]. Abdullah Al Mutairi, Bader Ali and Paul Manuel, “*Packing in Carbon Nanotubes*”, **Journal of Combinatorial Mathematics and Combinatorial Computing**, Volume 92, pp. 195-206, 2015.  
**Scopus Impact Factor 0.546**
- [33]. Indra Rajasingh, R. Sundara Rajan, Rajesh M and Paul Manuel, “*Oriented Diameter of Grids*”, **Journal of Combinatorial Mathematics and Combinatorial Computing**, Volume 92, pp. 283-288, 2015.  
**Scopus Impact Factor 0.546**
- [34]. Paul Manuel and A. S. Shanthi, “*Berge–Fulkerson Conjecture on Certain Snarks*”, **Mathematics in Computer Science**, 7, May 2015  
**Scopus Impact Factor 0.54**
- [35]. Paul Manuel, Bharati Rajan, Cyriac Grigorious, Sudeep Stephen, “*On the Strong Metric Dimension of Tetrahedral Diamond Lattice*”, **Mathematics in Computer Science**, 07 May 2015  
**Scopus Impact Factor 0.54**
- [36]. Sundara Rajan, Paul Manuel. Indra Rajasingh, Parthiban Natarajan and Mirka Miller, “*A Lower Bound for Dilation of an Embedding*”, **The Computer Journal**, Volume 58, Issue 12, Pages 3271–3278, 2015.  
**ISI Impact factor 1.762 (Q2)**

## 2014:

- [37]. Cyriac Grigorious, Paul Manuel, Mirka Miller, Bharati Rajan, Sudeep Stephen, “*On the metric dimension of Circulant and Harary graphs*”, **Applied Mathematics and Computation**, Volume 248, Pages 47–54, 2014.  
**ISI Impact Factor 4.397 (Q1)**
- [38]. Indra Rajasingh, Paul Manuel, A. S. Shanthi, “*Excessive Index of Certain Nanotubes*”, **Journal of Computational and Theoretical Nanoscience**, 11(9), 2014.

**ISI Impact factor 1.256 (Q2).**

- [39]. Indra Rajasingh, Bharati Rajan, Paul Manuel, Joice Punitha, “*Total - Kernel in Oriented Circular Ladder and Mobius Ladder*”, **Ars Combinatoria** - 126: 337-349, 2016.

**ISI Impact factor 0.396.**

- [40]. Bharati Rajan, Indra Rajasingh, Jude Annie Cynthia and Paul Manuel, “*Metric Dimension of Directed Graphs*”, **International Journal of Computer Mathematics**, Volume 91, Issue 7, pp. 1397-1406, 2014.

**ISI Impact factor 1.750 (Q2)**

- [41]. Thalaya Al-Fozan, Paul Manuel, Indra Rajasingh, and R. Sundara Rajan, “*Computing Szeged Index of Certain Nanosheets Using Partition Technique*”, **MATCH Communications in Mathematical and in Computer Chemistry**, Volume 72, pp. 339-353, 2014.

**ISI Impact factor 2.633 (Q1)**

- [42]. Thalaya Al-Fozan, Paul Manuel, Indra Rajasingh, and R. Sundara Rajan, “*A New Technique to Compute Padmakar-Ivan Index and Szeged Index of Pericondensed Benzenoid Graphs*”, **Journal of Computational and Theoretical Nanoscience**. Volume 11, Number 2, pp. 533-539, 2014.

**ISI Impact factor 1.256 (Q2).**

- [43]. Paul Manuel, Indra Rajasingh and Arockiaraj, “*Computing Total-Szeged Index of Nanostar Dendrimer  $NSC_5C_6$* ”, **Journal of Computational and Theoretical Nanoscience**. Volume 11, Number 1, pp. 160-164, 2014

**ISI Impact factor 1.256 (Q2).**

## 2013:

- [44]. Paul Manuel, Indra Rajasingh and Arockiaraj, “*Total-Szeged Index of  $C_4$ -nanotubes,  $C_4$ -nanotori and Dendrimer Nanostars*”, **Journal of Computational and Theoretical Nanoscience**. Vol 10, No 2, pp. 405-411, February 2013.

**ISI Impact factor 1.256 (Q2).**

- [45]. Paul Manuel, Indra Rajasingh, Bharati Rajan and R. Sundara Rajan, “*A New Approach To Compute Wiener Index*”, **Journal of Computational and Theoretical Nanoscience** Vol 10, No 6, pp. 1515-1521, June 2013

**ISI Impact factor 1.256 (Q2)**

- [46]. Indra Rajasingh, Paul Manuel, M. Arockiaraj, Bharati Rajan, “*Embedding of circulant networks*”, **Journal of Combinatorial Optimization**, Vol 26, No 1, pp 135-151, 2013;

**ISI Impact factor 1.262 (Q2).**

- [47]. Paul D. Manuel, Bharati Rajan, Indra Rajasingh, P. Vasanthi Beulah, “*Improved Bounds on the Crossing Number of Butterfly Network*”, **Discrete Mathematics & Theoretical Computer Science**, Vol 15, No 2 pp 87-94, 2013.

**ISI Impact factor 0.465.**

- [48]. Paul Manuel, “*A trust model of cloud computing based on Quality of Service*”, **Annals of Operations Research**, (2013): 1-12, April 24, 2013.

KU Project: WI 07/11  
**ISI Impact factor 4.820 (Q1).**

- [49]. Paul Manuel, Helal Al-Hamadi and Kalim Qureshi, “*Challenges, strategies and metrics for supply-driven enterprises*”, **Annals of Operations Research**, March 2013, DOI:10.1007/s10479-013-1346-z  
**ISI Impact factor 4.820 (Q1).**
- [50]. Paul Manuel, Indra Rajasingh and A. S. Shanthi, “*Excessive Index of Certain Chemical Structures*”, **International Journal of Pure and Applied Mathematics**. (IJPAM), vol. 84, No. 2 (2013).  
**Scopus Impact Factor 0.559.**

## 2012:

- [51]. Paul Manuel, Indra Rajasingh, and R. Sundara Rajan, “*Embedding variants of hypercubes with dilation 2*”, **Journal of Interconnection Networks**, Volume 13, Issue 01n02, pp 1250004 (2012).  
**ISI Impact Factor 0.176.**
- [52]. Indra Rajasingh, Michael Arockiaraj, Bharati Rajan and Paul Manuel, “*Minimum wirelength of hypercubes into  $n$ -dimensional grid networks*”, **Information Processing Letters**, Vol 112, No. 14-15, pp. 583-586, (2012).  
**ISI Impact factor 0.851 (Q2)**
- [53]. Indra Rajasingh, Paul Manuel, Bharati Rajan and Arockiaraj, “*Wirelength of hypercubes into certain trees*”, **Discrete Applied Mathematics**. Vol 160 Issue 18, pp 2778-2786, (2012).  
**ISI Impact factor 1.254 (Q2).**
- [54]. Babar Nazir, Kalim Qureshi and Paul Manuel, “*Replication based fault tolerant job scheduling strategy for economy driven grid*”, **Journal of Supercomputing**, Volume 62, No 2, pp 855-873, November (2012)  
**ISI Impact factor 2.557 (Q1).**

## 2011:

- [55]. Indra Rajasingh, M. Arockiaraj, Bharati Rajan and Paul Manuel, “*Circular Wirelength of Generalized Petersen Graphs*”, **Journal of Interconnection Networks**, Vol. 12, No. 4, pp. 319–335, (2011).  
**ISI Impact Factor 0.176.**
- [56]. Ahmed Al-Kandari, Paul Manuel and Indra Rajasingh, “*Wiener Index of Sodium Chloride and Benzenoid Structures*”, **Journal of Combinatorial Mathematics and Combinatorial Computing**, Vol 79, pp. 33-42, (2011).  
**ISI Impact Factor 0.435**
- [57]. Paul Manuel, Arockiaraj, Indra Rajasingh and Bharati Rajan, “*Embedding hypercubes into cylinders, snakes and caterpillars for minimizing wirelength*”, **Discrete Applied Mathematics**, Vol 159, pp. 2109–2116, (2011).  
**ISI Impact factor 1.254 (Q2).**



- [58]. Indra Rajasingh, Bharati Rajan, R Sundara Rajan and Paul D. Manuel, “*Embedding in Fat Trees*”, **Journal of Combinatorial Mathematics and Combinatorial Computing**, Vol 79, pp. 139-146, (2011).  
**ISI Impact Factor 0.435**
- [59]. Paul D. Manuel, Mostafa Ibrahim Abd-El Barr, and S. Thamarai Selvi, “*A Novel Trust Management System for Cloud Computing - IaaS Providers*”, **Journal of Combinatorial Mathematics and Combinatorial Computing**, Vol 79, pp. 3-22, (2011).  
**ISI Impact Factor 0.435**
- [60]. Paul Manuel, “*Locating and liar domination of Circulant Networks*”, **Ars Combinatoria**, Vol 101, pp. 309-320, (2011).  
**ISI Impact factor 0.396**
- [61]. M. Arockiaraj, Paul Manuel, Indra Rajasingh, Bharati Rajan, “*Wirelength of 1-fault Hamiltonian graphs into wheels and fans*”, **Information Processing Letters**, Vol 111, pp. 921–925, (2011).  
**ISI Impact factor 0.851 (Q2)**
- [62]. Paul Manuel, Bharati Rajan, Indra Rajasingh, and Chris Monica, “*Landmarks in Binary Tree Derived Architectures*”, **Ars Combinatoria** Vol 99, pp. 473-486, (2011).  
**Impact factor 0.396**
- [63]. Paul Manuel, “*Minimum Average Congestion of Enhanced and Augmented Hypercubes into Complete Binary Trees*”, **Discrete Applied Mathematics** Vol 159, pp 360–366, (2011).  
**ISI Impact factor 1.254 (Q2).**
- [64]. Paul Manuel and Mohsen Guizani, “*Broadcasting algorithms of carbon nanotubes*”, **Journal of Computational and Theoretical Nanoscience**, Vol. 8, pp 1–9, (2011).  
**ISI Impact factor 1.256 (Q2)**
- [65]. Kalim Qureshi, Syed Munir Hussain Shah, Paul Manuel, “*Empirical Performance Evaluation of Schedulers for Cluster of Workstations*”, **Cluster Computing**, Vol. 14, no. 2, pp 101-113, (2011).  
**ISI Impact factor 2.303 (Q1).**
- [66]. Kalim Qureshi, Fiaz Gul Khan, Paul Manuel, Babar Nazir, “*A Hybrid Fault Tolerance Technique in Grid Computing System*”, **Journal of Supercomputing**, Vol. 56, no. 1, pp 106-128, (2011).  
**ISI Impact factor 2.557 (Q1).**
- [67]. Paul Manuel and Indra Rajasingh, “*Minimum Metric Dimension of Silicate Networks*”, **Ars Combinatoria** Vol 98, pp 501-510 (2011).  
**ISI Impact factor 0.396**
- [68]. Kalim Qureshi, Attiqa Rehman and Paul Manuel, “*Enhanced GridSim Architecture with Load Balancing*”, **Journal of Supercomputing**, vol. 57, no. 3, pp 265-275, (2011).  
**ISI Impact factor 2.557 (Q1).**

## 2010:

- [69]. Paul Manuel, “*Computational Aspects of Carbon and Boron Nanotubes*”, **Molecules - From Computational Chemistry to Complex Networks**, Vol 15, No 12, pp 8709 – 8722 (2010). **ISI Impact factor 4.927 (Q1)**.
- [70]. Bharati Rajan, Indra Rajasingh and Paul Manuel, “*On Minimum Metric Dimension of Circulant Networks*”, **Journal of Computer and Mathematical Sciences** 1 (2), 155-162, 2010.  
**Impact factor 0.676.**

## 2009:

- [71]. Paul Manuel, Indra Rajasingh, Bharati Rajan, and Helda Mercy, “*Exact Wire length of Hypercubes on a Grid*”, **Discrete Applied Mathematics** Vol 157, No 7, pp 1486 – 1495, (2009).  
**ISI Impact factor 1.254 (Q2)**.
- [72]. Babar Nazir, Kalim Qureshi and Paul Manuel, “*Adaptive checkpointing strategy to tolerate faults in economy based grid*”, **Journal of Supercomputing**, Vol 50, No 1, pp 1-18, (2009).  
**ISI Impact factor 2.557 (Q1)**.
- [73]. Paul Manuel, Indra Rajasingh, Bharati Rajan, Joice Punitha, “*Kernel in Oriented Circulant Graphs*”, **Combinatorial Algorithms, Lecture Notes in Computer Science** Volume 5874, pp 396-407, (2009). DOI: 10.1007/978-3-642-10217-2\_39., **Springer, Germany**.

## 2008:

- [74]. Paul Manuel, Indra Rajasingh, Bharati Rajan, R. Prabha, “*Rupture Degree of Binary Trees*”, **Journal of Combinatorial Mathematics and Combinatorial Computation**, Vol 67, pp 181-187, 2008  
**ISI Impact Factor 0.435**
- [75]. Paul D. Manuel, Mostafa Ibrahim Abd-El Barr, and S. Thamarai Selvi, “*Knowledge Based Document Management System for Free-Text Documents Discovery*”, **Journal of Combinatorial Mathematics and Combinatorial Computing**, Vol 67, pp 141 – 152, (2008).  
**ISI Impact Factor 0.435**
- [76]. Paul D. Manuel, Mostafa I. Abd-El-Barr, Indra Rajasingh, and Bharati Rajan. “*An efficient representation of Benes networks and its applications*”, **Journal of Discrete Algorithms**, March Vol 6, No. 1 pp. 11 – 19, (2008).  
**Scopus Impact Factor 0.822**
- [77]. Paul Manuel, Indra Rajasingh, Bharati Rajan and Helda Mercy, “*Exact wirelength of hypercube layout on k-cube necklace*”, **Journal of Combinatorial Mathematics and Combinatorial Computation**, Vol 67, pp. 67 – 76, (2008).  
**ISI Impact Factor 0.435**

- [78]. Paul Manuel, Bharati Rajan, Indra Rajasingh, and Chris Monica M, “*On Minimum Metric Dimension of Honeycomb Networks*”, **Journal of Discrete Algorithms**, March Vol 6, No. 1 pp. 20 – 27, (2008).  
**Scopus Impact Factor 0.822.**
- [79]. Bharati Rajan, Indra Rajasingh, Chris Monica M and Paul Manuel, “*Metric Dimension of Enhanced Hypercube Networks*”, **Journal of Combinatorial Mathematics and Combinatorial Computing**, Vol 67, pp. 5 – 15, (2008).  
**Scopus Impact Factor 0.546**
- [80]. Paul Manuel, B. Sivakumar and G. Arivarignan. “*A perishable inventory system with service facilities and retrial customers*”, **Computers & Industrial Engineering**, Vol. 54, pp. 484–501, (2008).  
**ISI Impact factor 7.18 (Q1)**

## 2007:

- [81]. Paul Manuel, Kalim Qureshi, Albert William and Albert Muthumalai. “*VLSI Layout of Benes Networks*”, **Journal of Discrete Mathematical Sciences & Cryptography**, Vol 10, No 4, pp. 461 – 472, (2007).  
**Scopus Impact Factor 1.9**  
**ISI Impact Factor 0.45**
- [82]. Paul Manuel, B. Sivakumar and G. Arivarignan. “*A perishable inventory system with service facilities, MAP arrivals and PH — service times*”, **Journal of Systems Science and Systems Engineering**, Vol. 16, No. 1, pp. 62 – 73, (2007).  
**ISI Impact factor 1.541 (Q1)**
- [83]. Kalim Qureshi and Paul Manuel. “*Adaptive pre-task assignment scheduling strategy for heterogeneous distributed raytracing system*”, **Computers and Electrical Engineering** Vol. 33 pp. 70–78, (2007).  
**ISI Impact factor 4.152 (Q1).**

## 2006:

- [84]. Paul Manuel, B. Sivakumar and G. Arivarignan. *Service Facility Inventory System with Impatient Customers*, **International Journal of Mathematics, Game Theory and Algebra**. Vol. 15, No. 4, pp. 355-367 (2006).  
**Nova Science Publishers, NY, USA**
- [85]. Paul Manuel, Bharati Rajan, Indra Rajasingh, Chris Monica M. “*Landmarks in Torus Networks*”, **Journal of Discrete Mathematical Sciences & Cryptography**, Vol 9, No. 2, pp. 263-271, (2006).  
**Scopus Impact Factor 1.9.**  
**ISI Impact Factor 0.45**

## 2005:

- [86]. Elias Dahlhaus, Paul Manuel, and Mirka Miller. “*Parallel algorithms for generalized clique transversal problem*”. **Australasian Journal of Combinatorics**, Vol 33, pp. 3-14 (2005).  
**Scopus Impact Factor 0.917 (Q2)**
- [87]. Paul Manuel. “*A Model Of EGovernance Based On Knowledge Management*”, **Journal of Knowledge Management Practice**, ISSN 1705-9232, Vol 6, pp.1-7, (2005).  
**The Leadership Alliance Inc. Canada**

### 1983 - 2004:

- [88]. Indra Rajasingh, Albert William, Jasintha Quadras, and Paul D. Manuel, “*Embedding of Cycles and Wheels into Arbitrary Trees*”, **Networks**, Vol 44, Issue 3 , pp. 173 – 178 (2004).  
**ISI Impact factor 1.871 (Q1)**
- [89]. Paul D. Manuel, and Jarallah AlGhamdi. “*A data-centric design for n-tier architecture*”, **Information Sciences**, Vol. 150, Issue 3-4, pp. 195-206, (2003).  
**ISI Impact factor 3.291 (Q1).**
- [90]. Albert William, Indra Rajasingh, Jasintha Quadras and Paul D. Manuel, “*Embedding of Generalized Wheels into Arbitrary Trees*”, **Electronic Notes in Discrete Mathematics**, Vol. 15, pp. 230-233, October (2003).  
**ISI Impact factor 0.25**
- [91]. K. R. Nagarajan, Paul Devasahayam Manuel, and T. Soundararajan, “*Products of three triangular matrices over commutative rings*”, **Linear Algebra and its Applications**, Vol. 348, pp. 1-6 (2002).  
**ISI Impact factor 1.401 (Q1)**
- [92]. K. R. Nagarajan, Paul Devasahayam Manuel, and T. Soundararajan, “*Products of three triangular matrices*”, **Linear Algebra and its Applications**, Vol. 292, pp. 61-71 (1999).  
**ISI Impact factor 1.401 (Q1).**
- [93]. Dahlhaus, E., Paul Devasahayam Manuel, and Miller, M., “*Maximum h-colorable subgraph problem in balanced graphs*”, **Information Processing Letters**, Vol.65, pp.301-303, 1998.  
**ISI Impact factor 0.706 (Q2).**
- [94]. Dahlhaus, E., Paul Devasahayam Manuel, and Miller, M., “*A characterization of strongly chordal graphs*”, **Discrete Mathematics**, Vol.187, pp.269-271, 1998.  
**ISI Impact factor 0.961 (Q2)**
- [95]. Kratochvil, J., Paul Devasahayam Manuel, Miller, M. and Proskurowski, A., “*Disjoint and unfolding domination in graphs*”, **Australasian Journal of Combinatorics**, Vol.18, pp.277-292, 1998.  
**ISI Impact Factor 0.917 (Q2)**
- [96]. Dahlhaus, E., Kratochvil, J., Paul Devasahayam Manuel, and Miller, M., “*Transversal partitioning in balanced hypergraphs*”, **Discrete Applied Mathematics**, Vol. 79, pp.75-90, 1997.  
**ISI Impact factor 1.254 (Q2).**

- [97]. John Eklund and Paul Devasahayam Manuel, “*Algorithms and Euclid’s computer*”, **Information Transfer**, Vol. 2, pp. 24-29 (1996).
- [98]. Peter Eades, Mark Keil, Paul Devasahayam Manuel, and Mirka Miller, “*Two minimum dominating sets with minimum intersection in chordal graphs*”, **Nordic Journal of Computing**, Vol. 3, pp. 220-237 (1996).
- [99]. Dahlhaus, E., Kratochvil, J., Paul Devasahayam Manuel, and Miller, M., “*Parallel algorithms for generalized clique transversal problems*”, **Australasian Journal of Combinatorics**, Vol. 33, pp. 3-14, 1995.  
**Impact Factor 0.917 (Q2)**
- [100]. Jan Kratochvil, Paul Devasahayam Manuel, and Mirka Miller, “*Generalized domination in chordal graphs*”, **Nordic Journal of Computing**, Vol. 2, pp. 41-50 (1995).
- [101]. Paul Devasahayam Manuel, “*Existence of infinitely many solutions for quasi-linear integro-differential equations*”, **Journal of Mathematical and Physical Sciences**, Vol. 18, pp. 36-42 (1989).  
**ISI Impact factor 1.488 (Q2)**
- [102]. Paul Devasahayam Manuel and V. Subba Rao, “*A monotone method for the equation  $U_{xyz} = f$* ”, **Journal of Applied Mathematics and Computation**, Vol. 25, pp. 175-186 (1988).  
**ISI Impact factor 1.32**
- [103]. Paul Devasahayam Manuel, “*Existence of monotone solutions for functional differential equations*”, **Journal of Mathematical for Analysis and Application**, Vol. 118, pp. 487-495 (1986).  
**ISI Impact factor 1.417 (Q1)**
- [104]. Paul Devasahayam Manuel, *Monotone method and periodic solutions of nonlinear parabolic boundary value problem for system*, **Bulletin of Australian Mathematical Society**, Vol. 29, pp. 231-242 (1985).  
**ISI Impact factor 0.622 (Q2)**
- [105]. Paul Devasahayam Manuel, “*Monotone iterative scheme for nonlinear hyperbolic boundary value problems*”, **Applicable Analysis**, Vol. 20, pp. 49-55 (1985).  
**ISI Impact factor 1.278 (Q2)**
- [106]. K. M. Das and Paul Devasahayam Manuel, “*Quasi-solutions and monotone method for infinite systems on nonlinear boundary value problems*”, “**Nonlinear Analysis TMA**”, Vol. 7, pp. 1051-1060 (1983).  
**ISI Impact factor 1.54 (Q1)**
-

## CONFERENCE PAPERS

### 2022-23

- [1]. Paul Manuel, "From Data to Truth – The Road Ahead", SCHOLAR IN RESIDENCE 2022–23, WORKSHOP ON DATA SCIENCE, Stella Maris College - 18 Jan 2023

### 2021-22

- [2]. Paul Manuel, Scientific Committee, InfoSec Summit 2022, Cybersecurity and Resilience, Kuwait University, Kuwait, 25 May 2022.
- [3]. Paul Manuel, Comparative study of C80 and B80 Fullerenes based on various molecular descriptors, The International Conference on Recent Strategies in Mathematics and Statistics (ICRSMS-2022), Indian Institute of Technology (IITM) and Stella Maris College, Chennai, India, 19 – 21 May 2022.
- [4]. Paul Manuel, Generalization of general position problem, International Conference on social media and artificial intelligence, St Mary's College, TN, India, 20 August 2021

### 2020-21

- [5]. Hawraa Aref Al-Mutawa and Paul Manuel, Human Resource Information System in Healthcare Organizations, The Fifth International Conference World S4 2021, London, UK, July 29 - 30, 2021
- [6]. Sondos Yousef Alonaizi and Paul Manuel, IoT-based smart government enablers: An exploration of governments' experiments, 2021 Fifth World Conference on Smart Trends in Systems Security and Sustainability (WorldS4), London, UK, July 29 - 30, 2021

### 2018-20

- [7]. Paul Manuel, "Revisiting path-type covering and partitioning problems", International Conference on Mathematical Computer Engineering (ICMCE 2020), VIT University, Chennai, India during 21-22 February 2020.
- [8]. Paul Manuel, Data Intelligence, Second International Conference on Internet of Things (ICIoT-2020), Chennai, India, February 17-21, 2020
- [9]. Paul Manuel, "Macro and micro level classification of social media private data", 7<sup>th</sup> World Conference on Information Systems and Technologies (WorldCist'19), Galicia, Spain, 16 - 19 April 2019
- [10]. Belmir Patkovic, Kassem Saleh, and Paul Manuel, "SIMS: A Stakeholder Information Management System for Successful Projects", Future Technologies Conference (FTC) 2018, Vancouver, BC, Canada, 3-14 November 2018
- [11]. Ali AlEnezi, Zainab AlMeraj and Paul Manuel "Challenges of IoT Based Smart-Government Development", 2018 IEEE Green Technologies Conference (GreenTech), Austin, TX, USA, 4-6 April 2018.
- [12]. Paul Manuel, "Classification of Private Data in Social Networks", the International Conference on Big Data and Cloud Computing (ICBDCC'18), KITS, Coimbatore, India, 23 March 2018.

- [13]. Paul Manuel, Pre-Conference Workshops - Quality Education in the 21st Century: Achieving Effectiveness, Creating Value. ANQAHE 3rd Regional Conference 2018, Kuwait, 27 March, 2018.
- [14]. Paul Manuel, "The General Position Problem in Graph Theory", International Conference on Mathematical Computer Engineering (ICMCE 2017), VIT University, Chennai, India during 03-04 November 2017.
- [15]. Paul Manuel, "The General Position Problem", IWOCA2017 - 28<sup>th</sup> International Workshop on Combinatorial Algorithms, Newcastle, Australia, July 17-21, 2017.
- [16]. Paul Manuel, International Conference on Computing Sciences (ICCS – 2018), Loyola College, Chennai, India, 8-9 January 2018.
- [17]. Paul Manuel, "The General Position Problem in Graph Theory", International Conference on Mathematical Computer Engineering (ICMCE 2017), VIT University, Chennai, India, 03-04 November 2017.
- [18]. Paul Manuel, "The General Position Problem", IWOCA2017 - 28<sup>th</sup> International Workshop on Combinatorial Algorithms, Newcastle, Australia, July 17-21, 2017.
- [19]. Paul Manuel, International seminar on recent advancement in computing technology, 12 January 2017, Arul Anandar College, Madurai, India.
- [20]. Paul Manuel, "Myth and Paradox of Social Media", International Conference on Recent Trends in Computing and Information Technology, Chennai, India, 31 March– 3 April 2017

## 2015-16

- [21]. Paul Manuel, "Proactive Patient Centred Health Information System", ICMCE 2016, 16th - 17th December 2016, VIT, Chennai, India
- [22]. Paul Manuel, "Propagation in carbon and boron nanotubes", Australasian Conference on Combinatorial Mathematics and Combinatorial Computing (40ACCMCC 2017), Newcastle (Australia), 12<sup>th</sup> – 16<sup>th</sup> December 2016.
- [23]. Albert William William and Paul Manuel, On the Metric Dimension of Tetrahedral Diamond, ICCSE-2015 - First Meeting of the International Conf on Computing Sciences and Engineering, Kuwait University, Kuwait, March 15-17, 2015.
- [24]. Paul Manuel, Indra Rajasingh, R. Sundara Rajan, N. Parthiban, T. M. Rajalaxmi, *A Tight Bound for Congestion of an Embedding*, Conference on Algorithms and Discrete Applied Mathematics (CALDAM 2015), February 8-10, 2015, Indian Institute of Technology, Kanpur, India.
- [25]. Paul Manuel, "A Novel Trust Management System of Cloud Computing", The 2013 World Conference on Information Systems and Technologies (WorldCIST'13), Portugal, 27 – 30 March 2013.
- [26]. Paul Manuel, *Teachers' Workshop*, 47<sup>th</sup> Annual Meeting of the European Petrochemical Association (EPCA) Annual Meeting 2013 – Berlin, September, 2013.
- [27]. Paul Manuel, UNESCO-HP Brain Gain Initiative Meeting, September 10-11, 2013, UNESCO, Fontenoy, 75007 Paris, France.
- [28]. Paul Manuel, "Cloud computing for supply-driven enterprises", International Workshop on Discrete Mathematics 2012 (IWODM2012), Tagore Engineering College, Chennai, India, 7 September, 2012.
- [29]. Paul Manuel, Indra Rajasingh and M. Arockiaraj, "Wiener and Szeged indices of regular tessellations", 2012 International Conference on Information and Network Technology (ICINT 2012), Chennai, India, 28-29 April, 2012, pp. 210-214.

- [30]. Paul Manuel, Helal Al-Hamadi and Kalim Qureshi, "Community Cloud for Supply Chain Optimization", International Conference on Mathematics in Engineering & Business Management (ICMEB 2012), March 9 - 10, 2012, Chennai, India.
- [31]. Paul Manuel, "Wiener index and Nanotechnology" 2<sup>nd</sup> WORKSHOP ON UNESCO-HP "BRAIN GAIN INITIATIVE", 7 February 2012, Newcastle Australia.
- [32]. Paul Manuel, "Structural Properties of Nanostar Dendrimers" 3<sup>rd</sup> WORKSHOP ON UNESCO-HP "BRAIN GAIN INITIATIVE", 8 March 2012, Chennai India
- [33]. Paul Manuel, Indra Rajasingh, Albert William, Antony Kishore, Structural Properties of Silicate Networks, The 2011 International Conference on Parallel and Distributed Processing Techniques and Applications (PDPTA'11) July 18-21, 2011, USA.
- [34]. Paul Manuel, Locating Dominating set and Liar Dominating Set, ICMCS 2011, Chennai, India January 7 – 8, (2011).
- [35]. Paul Manuel and Mohsen Guizani, Communication Algorithms in Carbon nanotube Architectures, ICMCS 2010, Chennai, India February 5 – 6, (2010).
- [36]. Paul D. Manuel, S. Thamarai Selvi and Mostafa Ibrahim Abd-El Barr, Trust Management System for Grid and Cloud Resources, ICAC 2009, Anna University, India, December 13-15, (2009).
- [37]. Paul Manuel, Indra Rajasingh, Bharati Rajan, and Joice Punitha, *Kernel in Oriented Circulant Graphs*, 20th International Workshop, IWOCA 2009, Hradec nad Moravicí, Czech Republic, June 28–July 2, (2009).
- [38]. Paul Manuel and Indra Rajasingh, "Topological Properties of Silicate Networks", 5th IEEE GCC Conferencie, Kuwait, March 16 – 19, (2009).
- [39]. Paul Manuel and Indra Rajasingh, "Minimum Metric Dimension of Silicate Networks", ICMCS 2009, Chennai, India, January 5 – 6, (2009).
- [40]. Paul Manuel, "Complexity issues of kernal problems", Workshop on Graph Theory, Chennai, India, December 18–19, (2007).
- [41]. Albert William, Bharati Rajan, Indra Rajasingh, and Paul Manuel, "Non Super Edge Magic Total Graphs" IWOGL 2008 4th International Workshop on Graph Labelling, Harbin, China, January 7-10, (2008).
- [42]. Paul D. Manuel, Mostafa Ibrahim Abd-El Barr, and S. Thamarai Selvi, *Knowledge Discovery Using Neural Network*, The International Conference on Information and Knowledge Engineering (IKE'07), Las Vegas, Nevada, USA, June 25-28, (2007).
- [43]. Indra Rajasingh, Bharati Rajan, Arockiaraj, and Paul Manuel, *The 2-Disjoint Path Problem for Circulant Digraphs*, International Conference on Mathematics and Computer Science, Loyola College, Chennai, India, March 1-3, 2007.
- [44]. Indra Rajasingh, Jasintha Quadras, and Paul D Manuel, *Embedding of a Class of Caterpillars into Trees*, Symposium On Graph theory - CMASM2007, Stella Maris College, Chennai, India January 6-8, 2007.
- [45]. Indra Rajasingh, Bharati Rajan, K. Yenoke, and Paul Manuel, *Radio Number of Graphs with Small Diameter*, International Conference on Mathematics and Computer Science, Loyola College, Chennai, India, March 1-3, 2007.
- [46]. Indra Rajasingh, Bharati Rajan, Arokiaraj Michael, and Paul D Manuel, *k-Equitable Labeling of Butterfly and Benes Networks*, International Conference on Mathematics and Computer Science, Loyola College, Chennai, India, March 1-3, 2007.
- [47]. Rajasingh, I., Rajan, B., Manuel, P., Miller, M., *Super edge-magic total labeling of spiked fans, hyper X-trees, dew drops and prisms*, in: J. Ryan & Dafik (editors), Proceedings of AWOCA 2006, the Seventeenth Australasian Workshop on Combinatorial Algorithms, Uluru, Australia, pp.222-230, 2006.



- [48]. Rajan, B., Rajasingh, I., Manuel, P., Miller, M., *Cordial labeling of butterfly networks and mesh of trees*, in: J. Ryan & Dafik (editors), Proceedings of AWOCA 2006, the Seventeenth Australasian Workshop on Combinatorial Algorithms, Uluru, Australia, pp.198-207, 2006.
- [49]. Paul Manuel, Kalim Qureshi, Albert William and Albert Muthumalai. *VLSI Layout of Benes Networks*, The 2006 International Conference on Foundations of Computer Science, FCS'06: Las Vegas, USA, June 26-29, 2006.
- [50]. Paul Manuel, Indra Rajasingh, Bharati Rajan, and Albert Muthumalai. *On Induced Matching Partitions of Certain Interconnection Networks*, The 2006 International Conference on Foundations of Computer Science, FCS'06: Las Vegas, USA, June 26-29, 2006.
- Paul Manuel, Bharati Rajan, Indra Rajasingh, and Chris Monica Mohan, *On Minimum Metric Dimension of Honeycomb Networks*, AWOCA 2005, 16th Australasian Workshop on Combinatorial Algorithms, University of Ballarat, Victoria, Australia September 18-21, pp. 445-455, 2005.
- [51]. Paul Manuel, Indra Rajasingh, and Bharati Rajan, *Embedding of Hypercubes into Complete Binary Trees*, AWOCA 2005, 16th Australasian Workshop on Combinatorial Algorithms, University of Ballarat, Victoria, Australia September 18-21, pp. 457-466, 2005.
- [52]. Paul Manuel, Mostafa I. Abd-El-Barr, Indra Rajasingh, and Bharati Rajan, *An Efficient Representation of Benes Networks and its Applications*, AWOCA 2005, 16th Australasian Workshop on Combinatorial Algorithms, University of Ballarat, Victoria, Australia September 18-21, pp. 217-230, 2005.
- [53]. Paul D. Manuel, Paul Manuel, Indra Rajasingh, Jasintha Quadras, *Embedding of Hypercubes into Complete Binary Trees*, The International Conference on Information & Computer Science ICICS'2004, pp 425 – 436, Nov 29 – Dec 01, 2004 Dhahran, Saudi Arabia.
- [54]. Bharati Rajan, Indra Rajasingh, Jude Annie Cynthia and Paul D. Manuel, *On minimum metric dimension*, “The Indonesia-Japan Conference on Combinatorial Geometry and Graph Theory”, September 13-16, 2003, Bandung, Indonesia.
- [55]. Indra Rajasingh, Bharati Rajan and Paul D. Manuel, *Embedding of Petersen graphs into complete binary trees*, “The Indonesia-Japan Conference on Combinatorial Geometry and Graph Theory”, September 13-16, 2003, Bandung, Indonesia.
- [56]. Paul D. Manuel, Omer F. Demirel, Hayrettin Zengin, and Albert William, “*User Interface Design of eCommerce for SMEs*”, “The 4<sup>th</sup> International Conference on Internet Computing” (IC 2003): pp. 543–546, June 23-26, 2003, Las Vegas, Nevada, USA.
- [57]. Paul D. Manuel, Bharathi Rajan, Indra Rajasingh, and Amutha Alaguvel, “*Tree Spanners, Cayley Graphs and Diametrically Uniform Graphs*”, “The 29<sup>th</sup> Workshop on Graph Theoretic Concepts in Computer Science” (WG 2003): June 19 - 21, 2003 in Elspeet, the Netherlands.
- [58]. Albert William, Indra Rajasingh, Jasintha Quadras and Paul D. Manuel, *Embedding of cycles into arbitrary trees*, “The Proceedings of the 2002 International Arab Conference on Information Technology” (ACIT 2002), Vol 2, pp. 984 – 991, December 16-20, 2002, Qatar.
- [59]. Bharathi Rajan, Indra Rajasingh, Amutha and Paul D. Manuel, *A study on centers of chordal graphs*, “The Proceedings of the 2002 International Arab Conference on Information Technology” (ACIT 2002), Vol 2, pp. 635 – 642, December 16-20, 2002, Qatar.
- [60]. Paul Devasahayam Manuel, and Jarallah AlGhamdi., *A data-centric design for n-tier architecture*, “Proceedings of The Fourth Workshop on Information and Computer Science”, pp. 105 – 115, March 17-18, 2002, Dhahran, Saudi Arabia.
- [61]. Elias Dahlhaus, Peter Eades, Mark Keil, Paul Devasahayam Manuel, and Mirka Miller, *A faster algorithm to recognize strongly chordal graphs*, "Sixth Australian Workshop on Combinatorial Algorithms", June 11-13, 1995, Darwin, Australia.

- [62]. Baskoro, E. T., Paul Devasahayam Manuel, Miller, M., Ryan, J. and Sutton, M., *Generalized clique covering in circular arc graphs*, "AWOCA 94", Darwin, pp.75-78, December 1994.
- [63]. Mark Keil, R. C. Laskar and Paul Devasahayam Manuel, *Domination problems in directed path graphs*, "Twenty-First Southeastern International conference in Combinatorics, Graph Theory and Computing", April 14-19, 1994, Florida, USA.
- [64]. Mark Keil, R. C. Laskar and Paul Devasahayam Manuel, *The vertex clique cover problem and some related problems in chordal graphs*, "SIAM Conference on Discrete Algorithms", March 4-8, 1994, San Francisco, USA.

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## TECHINICAL EXPERTISE

|                      |   |  |
|----------------------|---|--|
| Languages            | : | C, C++, JAVA, C#, COBOL  |
| Middleware           | : | Apache, MS-IIS, WebLogic   |
| Databases            | : | Oracle, MS-SQL Server, MS Access                                 |
| Mark-up Languages    | : | HTML, XML  |
| Script Languages     | : | VBScript, JavaScript   |
| Case Tools           | : | Rational Suite, MS-Projects                                      |
| Internet Technology  | : | .NET Frameworks  |
| Functional Expertise | : | Enterprise Resource Planning – ODOO<br>Machine Learning - Python |

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