

## **Elizabeth Rita Samuel**

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[https://scholar.google.com/citations?user=HaG\\_nJ4AAAAJ&hl=en&authuser=1](https://scholar.google.com/citations?user=HaG_nJ4AAAAJ&hl=en&authuser=1)

### *Objective*

*Research focus on parametric modeling- to obtain concise model that works and supports in easier control design.*

### **Education**

- PhD in Electrical engineering : Parametric model order reduction, Gent University. Joined May 2011. PhD degree awarded on the 4th of March, 2015.
- M Tech : Guidance and Navigational Control (Electrical and Electronics department, College of Engineering, Trivandrum Kerala University , India CGPA 9.1/10.
- B Tech : Electrical and Electronics, studied at Thangal Kunju Musliar College of Engineering, Quilon, Kerala University, India and had an aggregate of 87.08% , 1st RANK. Year 1998-2002. Awards •Gold medalist for Electrical engineering for the year 1998 – 2002 , Kerala University .

### **Experience**

- Faculty : Rajagiri School of Engineering and Technology – January 5<sup>th</sup>, 2017 – to present.
- Faculty : Adi Shankara Institute of Engineering and Technology – October 17, 2016 – to January 4<sup>th</sup>, 2017.
- Reseracher: Gent University with SUMO Group – March 2015 – July 2015.
- Lecturer: SCMS School of Engineering and Technology , Karukutty, Ernakulum, Kerala – (July 2008 – Jan 2009) Taught Control Systems and was responsible for the MATLAB sessions.
- Programmer Analyst: Cognizant Technology Solutions Pvt. Ltd, Chennai – (September 2006 – April 2008). \* Was a part of the data-warehousing of 3M Belgium. Maintained the Supply Chain details using Qlikview and Business Objects. Had been on-site for developing a new application for daily status analysis using Qlikview. This gave me an experience to adapt to new culture and to work with other highly motivated individuals, which helped me to develop my personality.

•Lecturer: Sree Buddha College of Engineering , Pattoor , Pandalam. (November 2005 – August 2006). \* Taught Solid State devices and was responsible for the digital circuits lab. \* Taught Computer Organization \* Was responsible for the Induction machines lab.

•Lecturer: Mar Baselios College of Engineering and Technology, Nalanchira, Thiruvananthapuram. (September 2002 – May 2003).

## **Publication**

### a. Book Chapters

• Elizabeth Rita Samuel, Luc Knockaert, Tom Dhaene, “Passive Parametric Macromodeling by Using Sylvester State-Space Realizations”. Chapter in the book Informatics in Control, Automation and Robotics, Lecture Notes Electrical Engineering, ISBN: 978-3-319-10890-2, Springer International Publishing Switzerland, 2014.

In preparation: • Elizabeth Rita Samuel, Luc Knockaert, Tom Dhaene. Multipoint Model Order Reduction using Reflective Exploration. Submitted to Springer Series Mathematics in Industry, October 2014.

### b. Papers in refereed journals

• Elizabeth Rita Samuel, Luc Knockaert, Francesco Ferranti, Tom Dhaene. Guaranteed Passive Parameterized Macromodeling by Using Sylvester State-Space Realizations. Published in IEEE Transactions on Microwave Theory and Techniques, 61(4):1444–1454, April 2013. (Impact factor : 2.943).

• Elizabeth Rita Samuel, Francesco Ferranti, Luc Knockaert, Tom Dhaene. Passivity-Preserving Parameterized Model Order Reduction Using Singular Values and Matrix Interpolation. Published in IEEE Transactions on Components Packaging and Manufacturing Technology, 3(6):1028–1037, June 2013. (Impact factor : 1.236).

• Elizabeth Rita Samuel, Luc Knockaert, Tom Dhaene. Model Order Reduction of Time-Delay Systems Using a Laguerre Expansion Technique. Published in IEEE Transactions on Circuits and Systems I: Regular Papers, 61(6):1815–1823, June 2014. (Impact factor: 2.303).

• Elizabeth Rita Samuel, Luc Knockaert, Tom Dhaene. Matrix Interpolation based Parametric Model Order Reduction for Multiconductor Transmission Lines with Delays. Published in IEEE Transactions on Circuits and Systems II, 62(3): 276-280, Nov 2014. (Impact factor 1.23).

• Elizabeth Rita Samuel, Francesco Ferranti, Luc Knockaert, Tom Dhaene. A Hybrid Adaptive Sampling Algorithm for Obtaining Reduced Order Models for Frequency Dependent State-Space Matrices. Published in International Journal of Numerical Modelling: Electronic Networks, Devices and Fields, 1099-1204, Dec 2015.

- Ngoy Mutionkole , Elizabeth Rita Samuel ; Dirk I. L. de Villiers ; Tom Dhaene. Parametric Modeling of Radiation Patterns and Scattering Parameters of Antennas. Published in IEEE Transactions on Antennas Volume 64 Issue 3, 1023-1031, Jan 2016.

#### c. Papers in conference proceedings

- Elizabeth Rita Samuel, Francesco Ferranti, Luc Knockaert, Tom Dhaene. Parameterized reduced order models with guaranteed passivity using matrix interpolation. Published in proceedings of the IEEE 16th Workshop on Signal and Power Integrity, pages 65–68, Sorrento, Italy, 2012.
- Elizabeth Rita Samuel, Francesco Ferranti, Luc Knockaert, Tom Dhaene. Robust passivity preserving parametric model order reduction using matrix interpolation. Published in proceedings of the 7th IFAC Symposium on Robust Control Design, pages 705–710, Aalborg, Denmark, 2012.
- Elizabeth Rita Samuel, Luc Knockaert, Tom Dhaene. Parametric macromodeling using interpolation of Sylvester based state-space realizations. Published in proceedings of 10th International Conference on Informatics in Control, Automation and Robotics, pages 319–325, Reykjavik, Iceland, 2013.
- Elizabeth Rita Samuel, Dirk Deschrijver, Luc Knockaert, Tom Dhaene. Model order reduction of parameterized state-space systems with sequential sampling. Published in proceedings of the International Symposium on Electromagnetic Compatibility, pages 342–347, Brugge, Belgium, 2013.
- Elizabeth Rita Samuel, Francesco Ferranti, Luc Knockaert, Tom Dhaene. Reduced order delayed systems by means of Laguerre functions and Krylov subspaces. Published in proceedings of the 18th IEEE Workshop on Signal and Power Integrity, pages 1–4, Ghent, Belgium, 2014.
- Elizabeth Rita Samuel, Rajeev U P, Dr. Dinesh Pai A., "Optimal Trajectory for Ascent Phase of a Launch Vehicle using Hybrid Approach", Proceedings of 6th National Conference on Technological Trends (NCTT 2005), College of Engineering Trivandrum, Nov 2005.
- Elizabeth Rita Samuel, Rajeev U P, Dr. Dinesh Pai A., 'Hybrid Approach for the Ascent Guidance of Advanced Launch Vehicle', International Journal of Tomography and Statistics, vol 5, No. W07, 2007.
- Elizabeth Rita Samuel, Francesco Ferranti, Luc Knockaert, Tom Dhaene. Multipoint Model Order Reduction using Reflective Exploration. 10th International Conference on Scientific Computing in Electrical Engineering, Wuppertal, Germany, 2014.
- Elizabeth Rita Samuel, Luc Knockaert, Tom Dhaene. Passivity preserving Multipoint Model Order Reduction using Reflective Exploration. Proceedings of 10th International Conference on Informatics in Control, Automation and Robotics, Vienna, Austria, 2014.
- Elizabeth Rita Samuel, Dirk Deschrijver, Francesco Ferranti, Luc Knockaert, Tom Dhaene. Multipoint model order reduction for system with delays. International Conference on Numerical electromagnetic and Multiphysics Modeling and

Optimization (NEMO), August 2015.

- Elizabeth Rita Samuel, Dirk Deschrijver, Luc Knockaert, Tom Dhaene ' Rational Modeling of Multivariate Multi-Fidelity Data. VII European Congress on Computational Methods in Applied Sciences and Engineering, Greece 2016.
- Niravadya V S, Caroline Ann Sam, Elizabeth Rita Samuel, 'Photovoltaic Pumping System using SVPWM based Induction motor drive with a High Gain Converter', Presented IEEE conference Coimbatore, April 2018.
- Ambili Mohan, Elizabeth Rita Samuel, Gylson Thomas, 'Helicopter Maneuverability Control using Nichols chart', Presented at IEEE International Conference on Emerging Trends 2018 at Toc H, Kochi.
- Midhun Varghese, Elizabeth Rita Samuel, Rinu Alice Koshy, 'Model of Prosthetic Arm's Finger using Neural Network', accepted for publication in the Proceedings of 2018 IEEE International Conference on Cyborg and Bionic Systems (CBS), October 25-27, 2018, Shenzhen, China.
- Anju Pillai, Elizabeth Rita Samuel, A Unnikrishnan, 'Variance Based Analysis for an Isolated Power System Using Kalman Filter and LQR', accepted for presentation at 15th IEEE India Council International Conference (INDICON) , Dec 2018.

### **Invited Talks**

- Parameterized modeling and model order reduction of large electrical systems – on 31<sup>st</sup> August 2015, Centre for modeling and simulation, Savitribai Phule Pune University (<http://cms.unipune.ac.in/announce/20150831/>).
- Parameterized modeling using Sylvester realization - 13<sup>th</sup> January 2016, IIT Bombay  
([https://www.ee.iitb.ac.in/web/schedule/seminar/\\_Parameterized\\_Macromodeling\\_Using\\_Sylvester\\_Realization\\_01\\_2016](https://www.ee.iitb.ac.in/web/schedule/seminar/_Parameterized_Macromodeling_Using_Sylvester_Realization_01_2016)).
- Parameterized Modeling and Model Order Reduction - 26<sup>th</sup> June 2016, IIIT Bangalore  
<https://www.iiitb.ac.in/newsletter2016/May-June2016.html>

### **Guidshipe (on going from 2017 – to present)**

- Prosthetic arm design and control: bachelor degree project

Co-supervisor for Doctoral Program

- State estimation for power system stability analysis
- 3 degree of freedom helicopter modeling and control using QFT
- State of Charge Optimization for regenerative braking of electric cars
- Switching algorithm for Inverter in Electric cars

## **Consultancy**

On Autonomous Trucks with Ashok Leyland, from January 2019 – till April 2020.

## **Research Interests**

Model order reduction, Parametric modeling, Adaptive sampling for design analysis, controller design, Machine learning, Optimization techniques.

## **Software Knowledge**

- CERTIFICATIONS ACQUIRED: Teradata Certified Professional V2R5
- TECHNICAL SKILLS Operating System Microsoft Windows (98, 2000, XP, Vista)
- Databases & Tools TERADATA, BUSINESS OBJECTS 5 and XI
  - Qlikview Tool
- MATLAB / Simulink
- LabVIEW

## **Personal Details**

Gender : Female

DOB : May 30th 1980

Marital Status : Married to Dr. John Mathew PhD (Information Systems from WSU, USA) Children : Two daughters , Joanne Sara John (DOB: 12th August 2009) and Kristina Susan John (DOB: 16<sup>th</sup> June 2017).

Nationality : Indian

## **References**

Prof. Dr. Tom Dhaene Professor Gent University Gaston Crommenlaan 8 Bus 201 B-9050 Gent, Belgium +32 9 331 49 33, +32 9 331 48 99 [tdhaene@intec.ugent.be](mailto:tdhaene@intec.ugent.be)

Prof. Dr. Dirk Deschrijver, Associate Professor , Department of Informtaion Technology, Gent University, Technologiepark 15, Gent [dirkdeschrijver@intec.ugent.be](mailto:dirkdeschrijver@intec.ugent.be)

Dr. Unnikrishnan A, Principal , Rajagiri School of Engineering and Technology, Kerala, India, [unnikrishnan\\_a@live.com](mailto:unnikrishnan_a@live.com)

<b>Impact factor</b>	<b>Journal</b>	<b>Citation</b>	<b>Published year</b>
2.9	Guaranteed passive parameterized macromodeling by using sylvester state-space realizations ER Samuel, L Knockaert, F Ferranti, T Dhaene IEEE Transactions on Microwave Theory and Techniques 61 (4), 1444-1454	18	2013
1.66	Matrix-interpolation-based parametric model order reduction for multiconductor transmission lines with delays ER Samuel, L Knockaert, T Dhaene IEEE Transactions on Circuits and Systems II: Express Briefs 62 (3), 276-280	12	2015
2.2	Model order reduction of time-delay systems using a laguerre expansion technique ER Samuel, L Knockaert, T Dhaene IEEE Transactions on Circuits and Systems I: Regular Papers 61 (6), 1815-1823	12	2014
1.15	Passivity-preserving parameterized model order reduction using singular values and matrix interpolation ER Samuel, F Ferranti, L Knockaert, T Dhaene IEEE Transactions on Components, Packaging and Manufacturing Technology	12	2013
4.13	Parametric modeling of radiation patterns and scattering parameters of antennas N Mutonkole, ER Samuel, DIL De Villiers, T Dhaene IEEE Transactions on Antennas and Propagation 64 (3), 1023-1031	7	2016
0.82	A hybrid adaptive sampling algorithm for obtaining reduced order models for systems with frequency dependent state-space matrices ER Samuel, F Ferranti, L Knockaert, T Dhaene International Journal of Numerical Modelling: Electronic Networks, Devices ...	17	2016