

Sridhar Chellappa

CONTACT INFORMATION

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Computational Methods in Systems and Control Theory
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RESEARCH INTERESTS

Model Order Reduction, Reduced Basis Method, Error Estimation, Adaptivity, Radial Basis Functions.

EDUCATION

Otto von Guericke University of Magdeburg, Germany

Ph.D. Candidate in Mathematics (expected Summer 2021)

- Affiliated to the International Max Planck Research School for Advanced Methods in Process and Systems Engineering (IMPRS ProEng)
- Dissertation Topic: Adaptivity and Error Estimation for Frequency- and Time-Domain Model Order Reduction
- Supervisors: Dr. Lihong Feng and Prof. Dr. Peter Benner

University of Oviedo, Spain

Master of Science in Electrical Engineering, 2016

- Joint Erasmus Mundus degree from: Sapienza University of Rome, Italy, University of Nottingham, UK and University of Oviedo, Spain

SASTRA University, India

Bachelor of Technology in Electrical Engineering, 2013

RESEARCH EXPERIENCE

Robert Bosch GmbH, Renningen, Germany

Master thesis: Modeling the High Frequency Behavior of Induction Machines

- Duration: Feb. 2016 – Aug. 2016

Alstom Grid, Chennai, India

Bachelor thesis: Estimation of Copper Losses in Busbar and Enclosure of a Gas Insulated Substation using Finite Element Modeling

- Duration: Jan. 2013 – Apr. 2013

Indian Institute of Technology (IIT), Kanpur, India

Topic: Study and Application of Numerical Techniques to Electromagnetic Systems

- Duration: May. 2012 – Jul. 2012

PUBLICATIONS

Published/Accepted for Publication

1. S. Chellappa, L. Feng and P. Benner, “Adaptive Basis Construction and Improved Error Estimation for Parametric Nonlinear Dynamical Systems”, *Int. J. Numer. Methods Eng.*, accepted June 2020 doi:10.1002/nme.6462.
2. S. Chellappa, L. Feng and P. Benner, “An Adaptive Sampling Approach for the Reduced Basis Method”, In C. Beattie, P. Benner, M. Embree, S. Gugercin, S. Lefteriu (Eds.), *Realization and Model Reduction of Dynamical Systems - A Festschrift in Honor of 70th Birthday of Thanos Antoulas*, Springer, accepted March 2020 <https://arxiv.org/abs/1910.00298>.
3. S. Chellappa, L. Feng, V. de la Rubia and P. Benner, “Adaptive Interpolatory MOR by Learning the Error Estimator in the Parameter Domain”, In P. Benner, T. Breiten, H. Faßbender, M. Hinze, T. Stykel and R. Zimmermann (Eds.), *Model Reduction of Complex Dynamical Systems*, Springer, accepted August 2020 <https://arxiv.org/abs/2003.02569>.

Under preparation

1. L. Feng, S. Chellappa, V. de la Rubia and P. Benner, “Inf-Sup-Constant-Free State Error Estimator for Model Order Reduction of Parametric Systems in Electromagnetics”, Under preparation to be submitted to *IEEE Transactions on Antennas and Propagation*.
2. V. de la Rubia, S. Chellappa, L. Feng and P. Benner, “Fast A Posteriori State Error Estimation for Reliable Frequency Sweep in Microwave Circuits via the Reduced-Basis Method”, Under preparation to be submitted to *IEEE Transactions on Microwave Theory and Techniques*.
3. S. Chellappa, L. Feng and P. Benner, “A Training Set Subsampling Strategy for the Reduced Basis Method”, Under preparation to be submitted to *Journal of Scientific Computing*.

CONFERENCE TALKS

Adaptive parameter sampling using surrogate error model, MODRED 2019, 28 – 30 Aug., 2019, Graz, Austria. (Contributed talk)

Adaptive bases construction for model reduction of parametric nonlinear dynamical systems, ICIAM 2019, 15 – 19 Jul., 2019, Valencia, Spain. (Invited talk)

Adaptive parameter sampling using surrogate error model, Colloquium 600, New Challenges in Finite Element Technology - From the Perspective of Mechanics and Mathematics, 12 – 14 Mar., 2019, Aachen, Germany. (Invited talk)

Adaptive model order reduction for parametric nonlinear dynamical systems, Colloquium 597, Reduced Order Modeling in Mechanics of Materials, 28 – 31 Aug., 2018, Bad Herrenalb, Germany. (Contributed talk)

Adaptive basis generation for model reduction of nonlinear systems, Reduced Basis Summer School (RBSS), 19 – 22 Sep., 2017, Goslar, Germany. (Contributed talk)

CONFERENCE POSTERS

Problem-tailored training set for the Reduced Basis Method, MORTECH 2019, 20 – 22 Nov., 2019, Paris, France.

Adaptive POD-DEIM model reduction based on an improved error estimator, MOREPAS IV, 10 – 13 Apr., 2018, Nantes, France.

TEACHING EXPERIENCE

Summer 2019 Course Assistant, Model Reduction of Dynamical Systems

HONORS AND AWARDS

2014 — 2016 Erasmus Mundus Category A Scholarship by the European Commission for the Masters Course in Sustainable Transportation and Electric Power Systems (EMMC STEPS)

2019 — Present Member, International Max Planck Research School for Advanced Methods in Process and Systems Engineering (IMPRS - ProEng)

OTHER ACTIVITIES

2019 — 2020 Office bearer (Treasurer) - SIAM Student Chapter, Magdeburg

REFERENCES

1. Dr. Lihong Feng
Team leader, Model Order Reduction (MOR)
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