

Jeyashree KRISHNAN

[LinkedIn](#)[Github](#)[Google Scholar](#)[ResearchGate](#)[ORCID](#)[Website](#)

PERSONAL DATA

EMAIL: krishnan@aices.rwth-aachen.de
PERSONAL WEBSITE: <https://www.jeyashreekrishnan.com/>
NATIONALITY: German
LAST UPDATED: May 2024

CURRENT POSITION

Data scientist and consultant at Siemens AG.

EDUCATION

- 2019 | Doctorate in Computational Sciences (dr. rer. nat.)
Faculty of Mechanical Engineering, RWTH Aachen University
Aachen, Germany
Aachen Institute for Advanced Study in Computational Engineering Science (AICES) and Joint Research Center for Computational Biomedicine (JRC-Combine)
Thesis: Modeling and Simulation of Complex Networks in Systems Biology
ADVISED BY: PROF. ANDREAS SCHUPPERT, PROF. CARSTEN HONERKAMP
DR. EDOARDO DI NAPOLI
- 2014 | Masters in Simulation Sciences (m. sc.)
Faculty of Mechanical Engineering, RWTH Aachen University
Aachen, Germany
AICES Fast-Track Doctoral Program
German Research School for Simulation Sciences (GRS)
Thesis: Detection of threshold crossings in Leaky Integrate-and-Fire neuron with α -shaped Post-Synaptic Currents in time-driven simulations
ADVISED BY: PROF. MARKUS DIESMANN, DR. EDOARDO DI NAPOLI
Coursework Advisor: Prof. Ahmed Ismail
- 2012 | Bachelors in Biotechnology (b. tech.)
Department of Biotechnology, Anna University
Chennai, India
Thesis: Mathematical Modeling of Stem Cell Bioreactors
ADVISED BY: PROF. SAMEER JADHAV, INDIAN INSTITUTE OF TECHNOLOGY, BOMBAY

PROFESSIONAL EXPERIENCE

- 07/2022 – Current | Data Scientist and Consultant, Advanced Analytics Group
Siemens Advanta Consulting, Munich, Germany
SIEMENS AG
- 01/2024 – Current | Visiting Researcher
RWTH Aachen, Aachen, Germany
CENTER FOR COMPUTATIONAL LIFE SCIENCES (CCLS)

01/2020 – 06/2022	Postdoctoral Researcher RWTH Aachen University, Aachen, Germany JOINT RESEARCH CENTER FOR COMPUTATIONAL BIOMEDICINE (JRC-COMBINE) <i>Computational Analysis of Neurodegenerative Diseases, Neuronode Project</i>
03/2020 – 04/2020	Visiting Researcher Utrecht University, Utrecht, The Netherlands Center for Complex Systems Studies (CCSS)
03/2015 – 12/2019	Doctoral Researcher RWTH Aachen University, Aachen, Germany AACHEN INSTITUTE FOR ADVANCED STUDY IN COMPUTATIONAL ENGINEERING SCIENCE (AICES) and Joint Research Center for Computational Biomedicine (JRC-Combine)
03/2019 – 05/2019	Visiting Researcher McGill University, Montreal, Canada Douglas Research Center/ Montreal Neurological Institute and Hospital
03/2015 – 02/2017	Research Assistant Jülich Research Center, Jülich, Germany INSTITUTE OF NEUROSCIENCE AND MEDICINE (INM)-6 AND INSTITUTE FOR ADVANCED SIMULATION (IAS)-6
04/2014 – 10/2014	Master Thesis Student Jülich Research Center, Jülich, Germany INSTITUTE OF NEUROSCIENCE AND MEDICINE (INM)-6 AND INSTITUTE FOR ADVANCED SIMULATION (IAS)-6
09/2013 – 10/2013	Student Assistant RWTH Aachen University, Aachen, Germany AACHEN INSTITUTE FOR ADVANCED STUDY IN COMPUTATIONAL ENGINEERING SCIENCE
04/2013 – 04/2014	Student Assistant Jülich Research Center, Jülich, Germany INSTITUTE OF NEUROSCIENCE AND MEDICINE (INM)-6 AND INSTITUTE FOR ADVANCED SIMULATION (IAS)-6
11/2011 – 05/2012	Bachelor Thesis Student Indian Institute of Technology, Bombay, India DEPARTMENT OF CHEMICAL ENGINEERING
04/2010 – 06/2010	Student Intern Jawaharlal Nehru Medical College and Hospital, Ajmer, India

TECHNICAL SKILLS

Environments: MacOS, Linux
 Languages: C , C++, Python, MPI/OpenMP, R, \LaTeX
 Applications: Git , MATLAB, Webdev, Mathematica, Inkscape, MS Office

PUBLICATIONS

1. Tree-Based Learning on Amperometric Time Series Data Demonstrates High Accuracy for Classification, **Krishnan J.**, Lian Z., Oomen P., He X., Majdi S., Ewing A., Schuppert A., arXiv:2302.02650 (2023)
2. Spike-by-Spike Frequency Analysis of Amperometry Traces Provides Statistical Validation of Observations in the Time Domain, **Krishnan J.**, Lian Z., Oomen P., He X., Majdi S., Ewing A., Schuppert A., arXiv:2302.02692 (2023)
3. FOXG1 dose tunes cell proliferation dynamics in human forebrain progenitor cells, Hettige N., Peng H., Wu H., Zhang X., Yerko V., Zhang Y., Jefri M., Soubannier V., Maussion G., Alsuwaidi S., Ni A., de Souza C. R., **Krishnan J.**, McCarty V., Antonyan L., Schuppert A., Turecki G., Fon E.A., Durcan T.M., Ernst C., *Stem Cell Reports*, Volume 17, Issue 3, Pages 475-488 (2022)
4. A Modified Ising Model of Barabási-Albert Network with Gene-type Spins, **Krishnan J.**, Torabi R., Di Napoli E., Schuppert A., *Journal of Mathematical Biology*, 81(3), 769-798 (2020), doi: 10.1007/s00285-020-01518-6
5. A Long-Range Ising Model of a Barabási-Albert Network, **Krishnan J.**, Torabi R., Di Napoli E., Honerkamp C., Schuppert A., arXiv:2005.05045
6. M. Jefri, S. Bell, H. Peng, G. Maussion, V. Soubannier, H. Wu, H. Silveira, J.-F. Theroux, **Krishnan J.**, O’Leary L.-A., Zhang X., Zhang Y., Moquin L., Gratton A., Schuppert A., Durcan T.-M., Fon E.-A., Ernst C. , Stimulation of L-type calcium channels increases tyrosine hydroxylase and dopamine content in ventral midbrain cells derived from human skin, *Stem Cells Transl Med.* 2020;9:697-712.
7. Metastable Regimes and Tipping Points of Biochemical Networks with Potential Applications in Precision Medicine, Samal S.S., **Krishnan J.**, Esfahani A.H., Lüders C., Weber A., Radulescu O. (2019) In: Lio P, Zuliani P. (eds) *Automated Reasoning for Systems Biology and Medicine*. Computational Biology, vol 30. Springer, Cham.
8. Perfect detection of spikes in the Linear Sub-threshold Dynamics of Point Neurons, **Krishnan J.**, Porta Mana P., Helias M., Diesmann M. and Di Napoli E., (2018), *Front. Neuroinform.* 11:75.
9. Extracts of Ocimum on Imipenem Resistant Gram Negative Bacteria, Rastogi V., Vijay C., **Krishnan J.**, Nirwan P. S., (2015), *J. Microbio. and Parasitology*.

SOFTWARE CONTRIBUTIONS

1. Tropical Sensitivity Scores (TROSS), Primary maintainer: TROSS determines the parameter sensitivity scores for a given biochemical reaction network based on the changes in tropical solutions.
2. NEST 2.16.0, Contributor: Charl Linssen, Mikkel Elle Lepperød, Jessica Mitchell, Jari Pronold, Jochen Martin Eppler, Chrisitan Keup, Alexander Peyser, Susanne Kunkel, Philipp Weidel, Yannick Nodem, Dennis Terhorst, Rajalekshmi Deepu, Moritz Deger, Jan Hahne, Ankur Sinha, Alberto Antonietti, Maximilian Schmidt, Luciano Paz, Jesús Garrido, Tammo Ippen, Luis Riquelme, Alex Serenko, Tobias Kühn, Itaru Kitayama, Håkon Mørk, Sebastian Spreizer, Jakob Jordan, **Jeyashree Krishnan**, Mario Senden, Espen Hagen, Alexey Shusharin, Stine Brekke Vennemo, Dimitri Rodarie, Abigail Morrison, Steffen Graber, Jannis Schuecker, Sandra Diaz, Barna Zajzon, and Hans Ekkehard Plesser. *Nest* 2.16.0. (2018). doi:10.5281/zenodo.1400175.
3. Swcarpentry/git-novice, Contributor: Software Carpentry: Version Control with Git, Madicken Munk, Katherine Koziar, Katrin Leinweber, Raniere Silva, François Michonneau, Rich McCue, Nima Hejazi, Simon Waldman, Rémi Emonet, Rayna Michelle Harris,

Amy L Olex, Erin Alison Becker, Jake Lever, Marie-Helene Burle, Brian Moore, Umihiko Hoshijima, Amiya Maji, Begüm D. Topçuo lu, Christoph Junghans, Jonah Duckles, Lex Nederbragt, Traci P, Alexander G. Zimmerman, Annika Rockenberger, Casey Youngflesh, Garrett Bachant, Holger Dinkel, James E McClure, James Tocknell, Jano Vidali, Jimmy O'Donnell, Joe Atzberger, jonestoddc, Kurt Glaesemann, Andrew Lonsdale, Maneesha Sane, Michael Zingale, Nicola Soranzo, Pey Lian Lim, Saskia Hiltemann, abracarambar, Ben Bolker, Bill Sacks, butterflyskip, Charlotte Moragh, Jones-Todd, David Jennings, Grant Sayer, Ian Lee, James Tocknell, Jeremy Teitelbaum, **Jeyashree Krishnan**, João Rodrigues, Jonathan Cooper, Kunal Marwaha, L.C. Karssen, Lauren Ko, Mark Woodbridge, Martino Sorbaro, Matt Critchlow, Matteo Ceschia, Matthew Bourque, Matthew Hartley, Maxim Belkin, Megan Potterbusch, Michael Torpey, Mingsheng Zhang, Oscar Arbeláez, Peace Ossom Williamson, Rene Gassmoeller, Richard Barnes, Ruud Steltenpool, Samuel Lelièvre, Sarah Stevens, Tobias Schlauch, Scott Bailey, Samniqueka Halsey, Stefan Siegert, Thomas Morrell, Tommy Keswick, Tracy Teal, Trevor Keller, TrevorLeeCline, Tyler Crawford Kelly, Tyler Reddy, Veronica Ikeshoji-Orlati, Wes Harrell, Will Usher, Wolmar Nyberg Åkerström ,10.5281/zenodo.3264950

4. LibraryCarpentry/lc-git, Contributor: Stable release, Christopher Erdmann, Katrin Leinweber, Belinda Weaver, James Baker, Nora McGregor, Dan Michel O. Heggø, Jonah Duckles, Alex Mendes, Jamene Brooks-Kieffer, Tim Dennis, Jeffrey Oliver, Bill McMillin, DStraining, Evan Williamson, Ryan Wick, Thea Atwood, 222064h, Alexander Mendes, ajtag, Kunal Marwaha, Shari Laster, Yuri, Madicken Munk, Katherine Koziar, Raniere Silva, Rich McCue, Nima Hejazi, Simon Waldman, Rémi Emonet, Rayna Harris, Amy Olex, Erin Alison Becker, Jake Lever, Marie-Helene Burle, Brian Moore, Umihiko Hoshijima, Amiya Maji, Begüm D. Topçuo lu, Christoph Junghans, Lex Nederbragt, Alexander Gary Zimmerman, Annika Rockenberger, Casey Youngflesh, Garrett Bachant, hdinkel, James E McClure, James Tocknell, Jano Vidali, James O'Donnell, Joe Atzberger, jonestoddc, Kurt Glaesemann, Andrew Lonsdale, Maneesha Sane, Michael Zingale, Nicola Soranzo, pllim, Saskia Hiltemann, abracarambar, Benjamin Bolker, Willian Sacks, butterflyskip, cmjt, David Jennings, Grant Sayer, Ian Lee, James Tocknell, Jeremy Teitelbaum, **Jeyashree Krishnan**, João Rodrigues, Jonathan Cooper, L.C. Karssen, Lauren Ko, Mark Woodbridge, Martino Sorbaro, Matt Critchlow, Matteo Ceschia, Matthew Bourque, Matthew Hartley, Maxim Belkin, Megan Potterbusch, Michael Torpey, Mindsheng Zhang, Oscar Arbeláez, Peace Ossom Williamson, Rene Gassmoeller, Richard Barnes, Ruud Steltenpool, Samuel Lelièvre, Sarah Stevens, Tobias Schlauch, Scott Bailey, Samniqueka Halsey, Stefan Siegert, Thomas Morell, Tommy Keswick, Tracy Teal, Trevor Keller, TrevorLeeCline, Tyler Crawford Kelly, Tyler Reddy, Veronica Ikeshoji-Orlati, Wes Harrell, Will Usher, Wolmar Nyberg Akerström, 10.5281/zenodo.3958223

WHITEPAPERS AND INDUSTRY PORTFOLIOS

1. Generative AI in healthcare (2024, February), Industry Portfolio, in collaboration with Sebastian Herrmann, Leander Fortmann and Stefan Kneip.
2. AI is transforming healthcare (2023, August), Whitepaper, in collaboration with Sebastian Herrmann, Jerome Panoff, Ulli Waltinger and Stefan Kneip.

CONFERENCE PRESENTATIONS AND INVITED TALKS

1. Siemens IoT Conference (2024, February), Fürth, Germany.
2. Siemens Simulation and Digital Conference (2023, November), Munich, Germany.
3. CCLS Opening Conference (2023, October), Aachen, Germany
4. PanIIT Conference (2023, October), Delft, The Netherlands
5. Siemens IoT Conference (2023, March), Nürnberg, Germany.

6. Siemens Simulation and Digital Conference (2022, November), Munich, Germany.
7. **J. Krishnan**, R. Torabi, C. Honerkamp, E. Di Napoli, A. Schuppert (2020, March). A Long-Range Ising Model of a Barabási-Albert Network. Invited Talk presented at the Mathematics Institute, Utrecht University.
8. **J. Krishnan**, R. Torabi, C. Honerkamp, E. Di Napoli, A. Schuppert (2019, October). A Statistical Mechanics Perspective of Phase Transitions in Lattices, Cliques and Scale-Free Networks. Talk presented at the Conference for Complex Systems 2019, Singapore.
9. **J. Krishnan**, A. Schuppert (2019, May). Spectrum Analysis of Calcium Oscillations in FOX-G1 Mutated Cells. Talk presented at Neuronode Annual Meeting, Guildford, UK.
10. **J. Krishnan**, R. Torabi, E. Di Napoli, A. Schuppert (2019, February). Organized Minisymposia on *Integrated Mathematical and Computational Approaches to Interface Models and Data in Systems Biomedicine* and presented a talk on Statistical Mechanics Perspective of Phase Transitions in Living Systems. SIAM Computational Science and Engineering (CSE)'19 Conference, Spokane, Washington, USA.
11. **J. Krishnan**, R. Torabi, A. Schuppert, E. Di Napoli (2018, June). Towards an Ising Model of Genetic Networks for Disease Modeling. Poster presented at the Systems Biology of Human Diseases (SBHD) 2018, Los Angeles, USA.
12. **J. Krishnan**, A. Schuppert, E. Di Napoli (2017, September). Simulation of phase transitions in gene-gene interaction networks. Talk presented at the Conference on Complex Systems 2017, Cancun, Mexico.
13. **J. Krishnan**, A. Schuppert, E. Di Napoli (2017, July). Simulation of phase transitions in scale-free networks. Talk presented at the SIAM Annual Meeting 2017, David Lawrence Convention Center, Pittsburgh, Pennsylvania, USA.
14. S. Samal, **J. Krishnan**, C. Lüders, A. Schuppert, M. Brehme, A. Weber, O. Radulescu (2017, July). Sensitive Parameters and Tipping Points of Biochemical Networks needed in Precision Medicine. Poster presented at the Systems Biology of Human Disease (SBHD) Conference 2017, Heidelberg, Germany.
15. **J. Krishnan**, A. Schuppert, E. Di Napoli (2017, June). A simulator for phase transitions in Ising models of scale-free networks. Poster presented at the VII GEFENOL Summer School on Statistical Physics of Complex Systems, IFISC, Palma de Mallorca, Spain.
16. P.G.L. Porta Mana, **J. Krishnan**, M. Helias, M. Diesmann, E. Di Napoli (2016, December). Efficient Implementation of Continuous-time Spiking Neuron Models. Poster presented at the IAS Symposium, Jülich, Germany.
17. **J. Krishnan**, P.G.L. Porta Mana, M. Helias, M. Diesmann, E. Di Napoli (2016, September). Perfect detection of spikes via time reversal. Talk and poster presented at the Bernstein Conference, Berlin, Germany.
18. **J. Krishnan**, P.G.L. Porta Mana, M. Helias, M. Diesmann, E. Di Napoli (2016, April). Precise Spiking Neuron models in the NEST Simulator. Poster presented at the Supercomputing and Modeling for the Human Brain (SMHB) General Assembly, Jülich, Germany.
19. **J. Krishnan** (2016, January). How precise are the precise neuron models in NEST?. Talk presented at the Workshop on Future Computing, Manchester, UK.
20. **J. Krishnan** (2015, September). Google Brain- A Large Scale Deep Learning AI. Talk presented at the SIAM Artificial Intelligence Seminar Series, SIAM Student Chapter, Aachen, Germany.
21. **J. Krishnan** (2015, August). Precise models in the NEST Simulator. Talk presented at the 2nd HBP School, Obergurgl, Austria.

22. **J. Krishnan**, M. Helias, E. Di Napoli, M. Diesmann (2015, July). Detection of threshold crossings in LIF neuron in time-driven simulations. Poster presented at the 3rd Aachen Conference on Computational Engineering Science (AC.CES), Aachen, Germany.
23. **J. Krishnan**, V. Rastogi (2011, March). Imipenem Resistance in Gram-Negative Bacteria. Talk presented at the World Congress on Biotechnology, Hyderabad, India.
24. **J. Krishnan** (2010, April). Mathematical Modeling of Stem-Cell Bioreactors. Talk presented at the Stem Cell and Regenerative Medicine Conference, Sri Ramachandra University, India.

SUPERVISION AND MENTORING

1. L. Kauderer (2021), Seminar project student, JRC for Computational Biomedicine, RWTH Aachen University.
2. Y. Li (2021), Student Assistant, JRC for Computational Biomedicine, RWTH Aachen University.
3. D. Ravi (2020), Student Assistant, JRC for Computational Biomedicine, RWTH Aachen University.
4. Z. Lian (2020-2021), Student Assistant, JRC for Computational Biomedicine, RWTH Aachen University.
5. A. Kang (2019), Rice University, Texas, Undergraduate Research Opportunities Program (UROP), JRC for Computational Biomedicine, RWTH Aachen.
6. A. Darsht (2018), Master Thesis, Department of Physics, RWTH Aachen University.
7. Computational and Mathematical Modeling Program (CAMMP) (2015), Instructor for a MINT crash course teaching Computational Engineering Science to high school students.

WORKSHOPS

1. Professional Presentation and Moderation, Munich, Germany, June 2024
2. CF A Learning Summit, Seeheim, Germany, July 2023
3. Complexity Management Camp, Westerham, Germany, April 2023
4. Effective Problem Solving Training Camp, Westerham, Germany, November 2022
5. Intrapreneur Bootcamp on Sustainable Manufacturing, October to December 2022, Hybrid, Germany
6. Aprecio Personality Workshop, Munich, Germany, July 2022
7. CF A Learning Summit, Seeheim, Germany, July 2022
8. Bio-IT World Conference
Boston, USA/ Online, September 21-23, 2021
9. Oxford Machine Learning Summer School (oxML)
Oxford, UK / Online, August 9-20, 2021.
10. Mathematics of Multiscale Biology
Nottingham, UK, July 1-8, 2018.
11. Programming a D-Wave Quantum Computer
Jülich, Germany, March 19-20 2018.

12. Parallel Programming in Computational Engineering Science (PPCES), Aachen, Germany, March 16-20 2015.
13. Jülich Guest Student Programme, (accepted) Jülich, Germany, August 2013.
14. Scientific Python Workshop, Jülich, Germany, 18-20 March 2013.
15. Winter Course in Mathematical Modeling and Computational Sciences AU-KBC, India, May 2010.
16. Summer Training course on Cancer Imaging Methods Cancer Institute, India, January 2010.

FELLOWSHIPS, GRANTS AND AWARDS

1. Exploratory Research Space (ERS) Fund OPSF661 for “Inference and Dynamical Simulation of the Gene-Regulatory Network in Single Cells”, RWTH Aachen University, Awarded for the period of July 2021- July 2022 (53,000 €).
2. Swaantje Mondt Research Visit Scholarship, Center for Complex Systems Studies, Utrecht University, Awarded for the year 2019-2020 (2000€).
3. Exploratory Research Space (ERS) Seed Fund CLS001 for “Phase Transitions in Living Systems”, RWTH Aachen University, Awarded for the period of May 2018 - December 2018 (30,000€).
4. Deutsche Forschungsgemeinschaft (DFG) Stipend, AICES Graduate School, RWTH Aachen University, *based on merit* (100,000€).
5. SIAM Computational Science and Engineering Conference (CSE'19) Travel Award and Registration Fee Waiver. Awarded September 2018 to present my Doctoral thesis at the Computational Science and Engineering Conference, at Spokane, Washington, *based on merit* (1000\$).
6. London Mathematical School (LMS) Summer School Stay Grant. Awarded July 2018 (£500).
7. Conference on Complex Networks (CCS'17) Registration waiver. Awarded September 2017 (\$400).
8. SIAM Annual Meeting Student Travel Grant and Registration Fee Waiver. Awarded March 2015 to represent SIAM Aachen Chapter, at Pittsburgh, *based on merit* (\$1000).
9. Human Brain Project Student Travel Grant. Awarded May 2015, *based on merit* (€500).

SERVICE AND SOCIETIES

1. Member
German Alliance for Global Health Research (GLOHRA)
July 2020 - July 2022
2. Board of Doctoral Candidates
Aachen Institute of advanced study in Computational Engineering Science (AICES)
Student Representative
2017
3. Society for Industrial and Applied Mathematics, Aachen Chapter
Student Member
2015 - 2020
RWTH Aachen University, Germany.

4. PA SiSc: Simulation Sciences Examination Board Meeting (Prüfungsausschusses), Faculty of Mechanical Engineering, RWTH Aachen University, Germany
Student member
2013 - 2014

CERTIFICATIONS

1. Mendix Rapid Developer Certification
Siemens Mendix
04/23, Mendix
2. Process Mining Certification
TU Eindhoven
03/23, Coursera
3. AWS Specialization
Amazon Web Services (AWS)
02/2021, Coursera
4. Deep Learning Specialization
deeplearning.ai
01/2021, Coursera
5. Machine Learning
Stanford University
03/2020, Coursera

TEACHING

1. Programming with MATLAB
Course on Computational Systems Biology and MATLAB programming offered as part of the Masters Program in Biomedical Engineering, RWTH Aachen University.
2018-2020.
2. Software Carpentry Instructor
Teaching basic lab skills for research in computational sciences
2018 - now.
3. Theoretical Neuroscience: Correlation structure of neuronal networks
Summer term 2013.
Documentation of lecture course and helper during lectures.

INTERESTS AND ACTIVITIES

- **Marathoner**
Ran 10+ (ultra-) marathons across 5 continents
- **Traveller**
Travelled to 50+ countries and 6 continents
- **Avid reader**
Read 100+ books in a year

MEDIA

- My podcast with coach Karina Inkster on plant-based food, running, and importance of critical thinking in diet choices (2024)
- Featured in 1MWIS STEM Women (2020)