Curriculum Vitae: Dr. Joseph Ivin Thomas

MBBS MD (Medical Physiology) BSc (Theoretical Physics) MSc (Theoretical Neuroscience)

- *Adjunct Faculty, School of Natural Sciences & Engineering, National Institute of Advanced Studies (NIAS), Bangalore, India*
- *Assistant Professor, Department of Medical Physiology, East Point Medical College, Bangalore, India*

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I work as an Assistant Professor of Medical Physiology at East Point College of Medical Sciences & Research Center, Bangalore (from Aug 2017 till date). I am also an Adjunct Faculty in the School of Natural Sciences & Engineering of the National Institute of Advanced Studies (NIAS), Bangalore (from July 2017). My educational and research background is both 'inter-' and 'multi-' disciplinary in nature, covering a broad range of distinct fields, as summarized below:

Educational Background (2 Master Degrees and 2 Bachelor Degrees)

1. MD in Medical Physiology (MS Ramaiah Medical College; Rajiv Gandhi University of Health Sciences, Karnataka)
2. MSc in Cognitive and Computational Neuroscience (University of Sheffield, United Kingdom)
3. BSc in Physics (Major) and Mathematics (Minor) (St. Albert's College, Cochin; Indira Gandhi University, New Delhi)
4. MBBS (MOSC Medical College; Mahatma Gandhi University, Kerala)

Papers Published:

1. The Classical Double Slit Experiment: A Study of the Distribution of Interference Fringes on distant screens of varied shapes European Journal of Physics (2020). IOP Publication.
2. Mathematical Metaphysics: Modeling Determinism and Free-will along the lines of Theological Compatibilism: International Journal of Philosophy (2019).
3. The Classical Double Slit Interference Experiment: A New Geometrical Approach: American Journal of Optics and Photonics (2019).
4. Current Status of Consciousness Research from the Neuroscience Perspective: Acta Scientific Neurology (2019).
5. A Comparative Study of the Effects of Superbrain Yoga and the Aerobic Exercise on Cognitive functions: National Journal of Physiology, Pharmacy and Pharmacology (2017).
6. A Comparative Study of Sensory-motor coordination, Executive function and Testosterone levels in Hypothyroid and Euthyroid Males: National Journal of Physiology, Pharmacy and Pharmacology (2017).

Dissertation Work

1. **For MSc Cognitive & Computational Neuroscience Program:** A Cartesian Approach to Modeling the Rodent Whisker Barrel Cortex System (2013): University of Sheffield, United Kingdom
2. **For MD Medical Physiology Program:** A Comparative Study of Sensory-motor coordination, Executive function and Testosterone levels in Hypothyroid and Euthyroid Males (2017): Ramaiah Medical College, Bangalore, India

Talks and Oral Papers delivered:

1. Current Status of Consciousness Research from the Neuroscience Perspective (2018): International Conference on Quantum Physics, Brain Functions in Modern Science & Buddhist Philosophy, Tibet House, Delhi
2. Harmony in the Metaphysics of Determinism and Free-will (2019): International Conference on Harmony – Interface of Cosmic, Ethical & Religious Orders, Christ University, Bangalore
3. Artificial Intelligence Simplified (2019): DePaul Institute of Religion and Philosophy, Bangalore
4. Scope of Consciousness Studies in Neuroscience, Buddhist Philosophy and Quantum Physics (2020): International Conference on Quantum Physics, Brain Functions in Modern Science & Buddhist Philosophy, Tibet House, Bangalore
5. Lecture series on Neurophilosophy (2020): DePaul Institute of Religion and Philosophy, Bangalore
6. A Comparative Study of Attention Control & Working Memory in newly diagnosed Hypothyroid & Euthyroid Males (2016): International Conference on Environment and Occupational Health hosted by Sree Balaji Medical College, Chennai

Poster Presentations:

1. The Classical Double Slit Experiment: A New Geometrical Approach Part-1 (2019): 11th Annual Karnataka Science and Technology Conference hosted by NMKRV College, Bangalore
2. The Classical Double Slit Experiment: A New Geometrical Approach Part-2 (2020): 107th Indian Science Congress Conference hosted by University of Agricultural Sciences, GKVK campus, Bangalore
3. Influence of Anthropometric Factors in Audiovisual Response Latency (2015): 36th Annual Conference of Indian Association of Biomedical Sciences hosted by Pondicherry University, Pondicherry.

Past Research Pre-prints (to be published soon):

1. A Mathematical Treatise on Polychronous Wavefront Computation and its Application into Modeling Neurosensory Systems (ResearchGate 2014)
2. The Geometry of Polychronous Wavefront Computation (ResearchGate 2015)

Citations received for work done in Computational Neuroscience (Polychronous Wavefront Computation):

1. Adaptation of Spike-Timing-Dependent Plasticity to Unsupervised Learning for Polychronous Wavefront Computation:
   Fred Highland & Corey Hart (2015); Lockheed Martin, USA; Procedia Computer Science, 61, 314-321
2. Implementing Multilayer Neural Network Behavior Using Polychronous Wavefront Computation:
   Fred Highland & Corey Hart (2016); University of Maryland, USA; Procedia Computer Science, 95, 159-167
3. Unsupervised Learning of Patterns Using Multilayer Reverberating Configurations of Polychronous Wavefront Computation:
   Fred Highland & Corey Hart (2016); University of Maryland, USA; Procedia Computer Science, 95, 175-184
4. Unsupervised Learning of Polychronous Wavefront Computation Configurations for Pattern Recognition:
   Fred Highland (2018); University of Maryland, Baltimore, USA; Procedia Computer Science, 140, 134-143

Citations received for work done in Cognitive Neuroscience:

1. Computational analysis of cortical EEG bio-signals and neural dynamics underlying an integrated mind-body relaxation technique:
   Third International Conference on Computing and Network Communications; Procedia Computer Science, 171 (2020) 341–349

Citations received for work done in Optical Physics:

1. Fundamentals of Microscopy: Sanderson, J. (2020); *Current Protocols in Mouse Biology*, *10*(2), e76.

Citations received for work done in Medical Physiology:

1. Role of yoga in attention, concentration and memory of medical students:
   National Journal of Physiology, Pharmacy and Pharmacology, 2018: 8(11): 1526-8
2. The effectiveness of superbrain yoga on concentration, memory and confidence in school students:
   Indian Journal of Traditional Knowledge, 2018: 17(4): 741-44
3. Effects of habitual physical activity level (PAL) on simple visual and auditory reaction time in healthy Indian adults:
   International Journal of Physiology, 2020: 8(1):142-147
4. Effect of Super-Brain Yoga on the Concentrating Ability of Students:
   International Journal of Physiology, 2020: 8, no. 3 (2020): 32-36.

Projects in progress:

a. Multiple-slit interference: A hyperbola-based analysis (Sent for peer-review)
b. A study of circular fringes associated with two-point source interference
c. Polychronous & Polychromatic Wavefront Computation: Theory & Applications

Work Experience in Academia (Total of 6+ Years):

1. As Tutor cum Postgraduate (MD) Candidate (2014-17) at Ramaiah Medical College, Bangalore: Deliver lectures on the theoretical and experimental aspects of Medical Physiology to students belonging to the following professional degree streams: Medicine (MBBS), Physiotherapy (BPT), Dental Sciences (BDS).
2. As an Assistant Professor (2017-20) at East Point Medical College, Bangalore: Deliver lectures on Medical Physiology and Biophysics to the following professional degree streams: Medicine (MBBS), Nursing (BSc), Physiotherapy (BPT), Paramedical & Allied Health Sciences (Degree & Diploma courses).

Administrative Roles & Responsibilities at East Point College of Medical Sciences & Research Center:

1) Formerly Provost & Warden of the Men's (Medical) Hostel & Resident's Quarters (2017-19)
2) Member of Research & Publication Committee, Anti-Ragging Committee, Sports Committee (2017-19)

Affiliations to International Scientific Organizations:

	Membership	Country	Year
1)	Association of Neurolinguistic Programmers (ANLP)	UK	2009
3)	Indian Science Congress Association (ISCA)	India	2019
4)	American Physical Society (APS)	USA	2020
5)	European Physical Society	France	2020

Special Postings during my MD Medical Physiology Program 2014 - 2017:

	Posting	Area of Training	Year & Duration
1)	National Institute of Mental Health and Neurosciences	Neurophysiology	2015, 2 Weeks
2)	Institute of Aerospace Medicine	Aviation Physiology	2015, 1 Week
3)	Sports Authority of India	Sports & Exercise Physiology	2015, 2 Weeks

Scores attained on revised Graduate Record Examination (GRE) & International English Language Testing System (IELTS):

Name of Examination	Date of Exam	Aggregate Score & Remarks
1) GRE (General Test)	14 Oct 2013	*QR: 158 (72nd Percentile) VR: 157 (73rd Percentile) AW: 4 (54th Percentile) T: 315 QR & VR Scale: 130-170 AW Scale: 0-6
	3 Oct 2019	*QR: 157 (64th Percentile) VR: 161 (88th Percentile) AW: 3.5 (39th Percentile) T: 318 QR & VR Scale: 130-170 AW Scale: 0-6
2) IELTS (Academic)	12 Oct 2013	Reading: 8.5 Listening: 8.5 Writing: 8.5 Speaking: 8.5 Overall Band Score: 8.5 (Band Scale: 0-9)
	10 Oct 2019	Reading: 9.0 Listening: 8.5 Writing: 7.0 Speaking: 8.5 Overall Band Score: 8.5 (Band Scale: 0-9) CEFR Level: C2 (Mastery Level)

* QR = Quantitative Reasoning; VR = Verbal Reasoning; AW = Analytical Writing; T=Total = QR+VR

Scholastic Achievements & Awards:

- BSc Physics Major Degree:

  Topped the University Records of the past 5 years, averaging 92% for all the Physics modules combined & 85% for all the Mathematics modules combined. The Overall score which includes Humanities & Language was 80%. This achievement was acknowledged by a specially drafted letter, issued by the Director of the School of Sciences of the University.

- MSc Cognitive & Computational Neuroscience Degree:

  Scored the highest marks in my batch at Sheffield University for the Computational modules in both the 1st and the 2nd Semesters. Passed the course with a Distinction and overall 2nd Position in the class. The Department was also kind enough to award me a 'Special Department Bursary' amounting to UK Pounds 1500.

- MD Medical Physiology Degree:

  Presented an Oral Paper in Sree Balaji Medical College, Chennai, as part of the ENVOCCON 2016 Conference.
  It was based on my dissertation work. The College was generous enough to award me the 1st Prize.

- As an Assistant Professor in Medical Physiology:

  Enrolled for online Basic Course in Biomedical Research (BCBMR) conducted by National Program on Technology Enhanced Learning (NPTEL) in conjunction with the Indian Council of Medical Research (ICMR) & National Institute of Epidemiology (NIE), mandated by the National Medical Commission (NMC). Secured an aggregate score of 86%.

Research Interests:

- Mathematical modelling of Neural Systems
- Computational aspects of Cognitive processes such as 'Learning & Memory'
- Physical and Neural Network basis of the Sensory-motor devices and Brain-machine interfaces.

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Conferences participated in:

	Conference Name	Hosting Venue & Organizing Body	Year
1)	NBNI Workshop on Neurobiology & Neuroinformatics	Cochin University of Science & Technology Department of Biotechnology, Cochin	2008
2)	Translational Sciences: Bridging Ancient & Modern Biomedicine, 36th Annual Conference of Indian Association of Biomedical Sciences	Pondicherry University, Department of Biotechnology, School of Life Sciences, Pondicherry	2015
3)	CME Program: "E = M4 Rediscovered Formula of Well Being" (in association with APPI – Bangalore Chapter)	Adichunchanagiri Institute of Medical Sciences, Department of Physiology, Mandya	2015
4)	ENVOCCON 2016 International Conference on Environment & Occupational Health	Sree Balaji Medical College & Hospital Department of Physiology, Chennai, Tamil Nadu	2016
5)	CME Program: ENVIRONS 2016, Environmental Psychology	JSS Medical College, Department of Physiology, Mysore, Karnataka	2016
6)	CME Program: Art of Scientific Publication	MS Ramaiah Medical College International Medical School, Bangalore	2016
7)	Neuroscience 2017: Recent Advances in Research in Brain & Diseases	MS Ramaiah Medical College Department of Physiology, Bangalore	2017
8)	Medical Education Unit: Workshop on Mentoring Medical Students	East Point College of Medical Sciences & Research Center	2017
9)	Workshop on Modern Physics, Reality and Ancient Indian Wisdom (Supported by the Indian Council of Philosophical Research, Government of India)	National Institute of Advanced Studies, Bangalore	2018
10)	Quantum Physics & Brain Function in Modern Science & Buddhist Philosophy	Tibet House, Cultural Center of HH Dalai Lama, New Delhi (Indian Habitat Center)	2018
11)	Harmony – Interface of Cosmic, Ethical and Religious Orders	Christ University, Bangalore	2019
12)	11th Annual Karnataka Science & Technology Conference on New Vistas in Science & Technology for the common good	NMKRV College, Bangalore	2019
13)	Artificial Intelligence Simplified	DePaul Institute of Religion and Philosophy, Bangalore	2019
14)	Quantum Physics & Brain Function in Modern Science & Buddhist Philosophy	Indian Institute of World Culture, Bangalore	2020
15)	107th Indian Science Congress Conference	University of Agricultural Sciences, GKVK campus, Bangalore	2020
16)	Workshop on "Artificial Intelligence"	National Institute of Advanced Studies, Bangalore	2020
17)	Lecture series on the topic "Introduction to Neuro-philosophy"	DePaul Institute of Religion and Philosophy, Bangalore	2020
18)	Webinar on "Planck's Constant"	Bishop Cotton Women's Christian College, Bangalore	2020
19)	Webinar on "Coping with Depression"	Christian Counseling, Bangalore	2020