A. Chandrashekaran
Assistant Professor,
School of Mathematics and Computer Sciences,
Central University of Tamil Nadu (CUTN), Thiruvarur.,
Tamil Nadu, INDIA.   E-Mail : chandrashekaran@cutn.ac.in

Education

- **Ph.D**, *Indian Institute of Technology Madras (IIT Madras)*, Chennai - 36 ; July 2010.
  Thesis title: ***Standard and semidefinite linear complementarity problems***

- **M.Sc**, *Ayya Nadar Janaki Ammal College*, Sivakasi
  affiliated to Madurai Kamaraj University, Madurai; 2002 - 2004 **(81.87%)**.

- **B.Sc**, *Ayya Nadar Janaki Ammal College*, Sivakasi
  affiliated to Madurai Kamaraj University, Madurai; 1999 - 2002**(82.45%)**.

- **Pre Degree/HSC**, *Tiruthangal Lions Matric. Hr. Sec. School*, Thiruthangal ; 1997 - 1999**(81.83%)**.

- **SSLC**, *Tiruthangal Lions Matric. Hr. Sec. School* , Tiruthangal ; 1996 - 1997**(77.18%)**.

Professional Positions

- Assistant Professor, School of Mathematics and Computer Sciences, Central University of Tamil Nadu, Thiruvarur; March 2012 -.

- Research Visit to Arbeitsgruppe Technomathematik, Technische Universitat, Kaiserslautern, Germany; January 11 - February 25, 2023.

- Visiting Faculty, Indian Institute of Management Indore; November 2013 - January 2014.

- Visiting Scientist, Indian Statistical Institute Hyderabad; June, 2013.

- Assistant Professor, Department of Mathematics, Birla Institute of Technology and Science Pilani, K. K. Birla Goa campus, Goa; December 2011 to February 2012.

- Guest Faculty, Department of Mathematics, University of Hyderabad; December 2010 and November 2011.

- Research Associate (DST Postdoctoral Fellow) at DST-CMS, C R Rao Advanced Institute of Mathematics Statistics and Computer Science (AIMSCS), Hyderabad; February 2010 to November 2011.

- Research Assistant (JRF), DST Project titled "Non-smooth vector bundles", Department of Mathematics, Indian Institute of Technology Madras, Chennai; September 2004 to December 2004.

Teaching Experience

- **Courses taught in the past**: Linear Algebra, Complex Analysis, Algebra I, Discrete Mathematics, Complex Analysis and Measure Theory, Functional Analysis, Optimization, Nonlinear Programming, Operations Research, Game Theory, Fixed Point Theory, Discrete Dynamical Systems, Scientific Computing Lab I (Python) and Scientific Computing Lab II (SageMath).

- **Teaching in MTTS**: The Mathematics Training and Talent Search (MTTS) programme is a training programmes in India funded by National Board for Higher Mathematics (NBHM). This programme has been running every summer since 1993, in various venues throughout India. I was a student participant of this programme in 2002 and a resident faculty since 2013. My experiences with this programme and my interactions with students from across the entire country with various backgrounds is something that I will cherish forever.

- We also guide final year Integrated MSc students at the Central University of Tamil Nadu on a project that involves helping the students read and learn Mathematics independently from books and research papers. Further, we help them write rigorous Mathematics as a project report or dissertation. In some instances, we guide the students to bring out new results.

PhD Guidance

- Dr. S. Gokulraj, Thesis title: *A study on linear and bilinear games*, Date of Viva: March 16, 2021. Present Position: Assistant Professor, Indian Institute of Information Technology, Dharwad, India.

- Ms. A. Shanmugapriya, Joined in 2019 and working towards her PhD thesis.

- Mr. Manu Mathew, Joined in 2021 and working towards his PhD thesis.

Research Work and Publications

Preprints/working papers

1. Shanmugapriya A. and Chandrashekaran A. *Lyapunov-like maps on the tensor product of proper polyhedral cones*, 2023.

Refereed Journals/Book Chapters

1. Shanmugapriya A. and Chandrashekaran A. *On the dual of the tensor product of semidefinite cones*, J Anal (2023).

2. Gokulraj S. and Chandrashekaran A. *A characterization for the self-duality of proper cones*, Positivity, **27**, 11 (2023).

3. Gokulraj S. and Chandrashekaran A. *Linear Games and Complementarity Problems*, Game theory and networks - new perspectives and directions, (2021) 17-35.

4. Gokulraj S. and Chandrashekaran A. *Linear complementarity problems and bi-linear games*, Applications of Mathematics, **65**, (2020) 665-675.

5. Chandrashekaran A., Sachindranath Jayaraman and Vatsalkumar N. Mer *A characterization of non-negativity relative to proper cones*, Indian Journal of Pure and Applied Mathematics, **51** (2019), no. 3, 935-944.

6. Gokulraj S. and Chandrashekaran A. *On symmetric linear games*, Linear Algebra Appln, **562** (2019), 44-54.

7. Chandrashekaran A., Sachindranath Jayaraman and Vatsalkumar N. Mer *Semipositivity of linear maps relative to proper cones in finite dimensional real Hilbert spaces*, Electronic Journal of Linear Algebra, **34** (2018), 304-319.

8. Chandrashekaran A. and Sachindranath Jayaraman *Linear maps on $M_n(\mathbb{R})$ preserving Schur stable matrices*, Bulletin of Kerala Mathematical Association, **16** (2018) 127-138.

9. Chandrashekaran A. and Sachindranath Jayaraman *Full column rank preservers that preserve semipositivity of matrices*, Spec. Matrices **6** (2018), 37-45.

10. Chandrashekaran A. and Sachindranath Jayaraman *Diagonalizability of the product versus diagonalizability of the individual factors*, Funct. Anal. Approx. Comput. **8** (2016), no. 3, 31-35.

11. Chandrashekaran A., Parthasarathy T. and Vetrivel V. *Solving strongly monotone linear complementarity problems*, Int. Game Theory Rev., **15** (2013), no. 4, 1340035, 13.

12. Chandrashekaran A., Parthasarathy T. and Ravindran, G. *On strong Z matrices*, Linear Algebra Appln, **432** (2010), 964-969.

13. Chandrashekaran A., Parthasarathy T. and Vetrivel V. *On the P_2' and P_2-properties in the semidefinite linear complementarity problem*, Linear Algebra Appln, **432** (2010), 134-143.

Conference Proceedings

1. Chandrashekaran A., Parthasarathy T. and Ravindran G. *History of Operations Research*, Proceedings of the Third National Conference on Management and Practice, 2008.

2. Chandrashekaran A., Parthasarathy T. and Ravindran G. *Bankruptcy Problem: A Game Theoretic Analysis*, Proceedings of the Second National Conference on Management and Practice, 2007, pp. 118 - 123.

Sponsored Projects

- (COMPLETED) Early Career Research Award(ECRA) project titled, *Linear complementarity problems over the cone of completely positive matrices* funded by Science and Engineering Research Board(SERB), India. 2018 - 21; Sanctioned Amount: Rs. 21,22,560/-.

- (COMPLETED) Mathematical Research Impact Centric Support(MATRICS) project titled, *A study on proper cones with applications to mathematical programming* funded by Science and Engineering Research Board(SERB), India. 2020 - 23; Sanctioned Amount: Rs. 6,60,000/-.

Professional Activities

Recent Invited Talks

- Linear Complementarity Problems, Pi Day Celebrations, Indian Institute of Technology Tirupati, Tirupati, India. Date: March 14, 2023.

- Hands on Training on MOODLE Platform, Vellalar College for Women, Erode, India. Date: March 3, 2023.

- Optimization problems from the paper industry, AG Optimierung, Technische Universitat, Kaiserslautern, Germany. Date: January 24, 2023.

- Lyapunov-like maps over the tensor product of proper cones, AG Technomathematik, Technische Universitat, Kaiserslautern, Germany. Date: January 23, 2023.

Selected Talks at Conferences

- Chandrashekaran, A., *Z-transformations and generalized bi-matrix games*, presented at the international conference on Game Theory and Networks, September 6 - 9, 2019, Dibrugarh University, Dibrugarh, India.

- Chandrashekaran A., Gokulraj S. and Sachindranath J. *Generalized Lyapunov transformation and semidefinite linear complementarity problems*, presented at The 6th International Conference on Matrix Analysis and Applications (ICMAA 2017), 15th to 18th June 2017, Duy Tan University, Da Nang, Vietnam.

- Chandrashekaran A., Parthasarathy T. and Vetrivel V. *Solving strongly monotone linear complementarity problems*, presented in the International Conference on Game Theory, Operations Research and their Applications (GTORA), January 5-7, 2012, Indian Statistical Institute Chennai, India.

- Chandrashekaran A., Parthasarathy T. and Vetrivel V. *On Semidefinite Linear Complementarity Problem*, presented in The Platinum Jubilee 75th Annual Conference of the Indian Mathematical Society, December 2009, Kalasalingam University, Krishnankoil, India.

Selected Lectures at Workshops

- Delivered lectures in various academic programmes of Mathematics Training and Talent Search (MTTS) Trust since 2013. The recent one is for MTTS 2023 held at Indian Institute of Technology Madras, Chennai during the period between May 22, 2023 to June 17, 2023.

- Mini Workshop on Linear Complementarity and Generalizations, 24 & 25 September, 2016, Indian Statistical Institute (ISI), Chennai.

- Advanced Instructional School on Mathematical Programming, July 4 to 23, 2016, CUTN, Thiruvarur, India.

- Game Theory and Optimization, June 6 to 10, 2016, IIT Madras, Chennai, India.

- Matrix Analysis & Applications, September 10 to 13, 2015 at Kerala School of Mathematics (KSOM), Calicut, India.

Conferences/Workshops Organized

- Workshop on Differential Geometry by Prof. S. Kumaresan, March 11 to 16, 2022 at CUTN funded by CUTN.

- Workshop on Game Theory by Prof. T. Parthasarathy, February 17 to 18, 2022 at CUTN funded by Science and Engineering Research Board (SERB), India.

- Advanced Instructional School on Mathematical Programming, July 4 to 23, 2016 at CUTN funded by National Centre for Mathematics (NCM), India.

- Mathematics Workshop for Undergraduate students, January 31 to February 2, 2016 at CUTN, TVR funded by National Board for Higher MAthematics, India.

- Workshop on Analysis and Geometry, 13 & 14th February, 2015 at CUTN, TVR funded by Central University of Tamil Nadu, India.

- Mathematics Workshop for Undergraduate students, 23rd to 25th January 2016 at CUTN, TVR funded by National Board for Higher MAthematics, India.

Reviewed Research Articles for the following Journals/Databases

- Annals of Mathematical Society (AMS) Mathematical Reviews

- Annals of Operations Research

- The Electronic Journal of Linear Algebra

Membership and Activities in Professional Associations

- Member, Advisory Board, Cloud Supply Chain Solutions, USA & India, Since February 2023.

- Special Invitee, Mathematics Training and Talent Search Trust, since April 2021.

- Member, The Institute for Operations Research and the Management Sciences (INFORMS), USA, 2022 - 2023.

- Member, American Mathematical Association (AMS), USA, 2021 - 2022.

- Life Member, IIT Madras Alumni Association.

Honors and Awards

- Senior Research Fellow, Council of Scientific and Industrial Research(CSIR), India; February 2007 to January 2010, Department of Mathematics, IIT Madras.

- Junior Research Fellow, Council of Scientific and Industrial Research (CSIR), India; January 2005 to January 2007, Department of Mathematics, IIT Madras.

- National Board for Higher Mathematics (NBHM) Research Award (JRF) 2004.

- National Board for Higher Mathematics (NBHM) MSc fellowship 2002.

- INSA Summer Research Fellow, Department of Mathematics, University of Hyderabad; under the guidance of Prof. V. Kannan, on the topic Discrete Dynamical Systems; April - May 2002.

Community Service

- MOODLE (A learning management system). I have installed, customized and managed the Central University of Tamil Nadu Learning Management system from 2013; Another instance of my customized MOODLE installation is the MTTS Classrooms.

- KOHA (A library management system). I have installed, customized and managed the Central University of Tamil Nadu Library Management system for the initial five years (2012 to 2017).

- In the recent past I have started contributing in the development of a LaTeX package to provide certain features in the Moodle Learning Management System.

- I recommend open source packages related to Mathematics and other sciences. In particular, I have delivered talks about Python, SageMath and Geogebra at various colleges in Tamil Nadu, India. I have introduced two courses on Python and SageMath for Integrated M.Sc students of Central University of Tamil Nadu.