Basic Details:

- **Name: Dr. K. Janaki**
- **Designation:** Assistant Professor
- **Phone Number:** 8939346041
- **Email ID:**janakik2@srmist.edu.in
- **Area of Subject:** Mathematics / Formal Languages and Automata Theory
- **Affiliation:** Department of Mathematics, Faculty of Engineering and Technology, SRM Institute of Science and Technology, Ramapuram Campus, Chennai – 600 089.

Educational Details:

- **Ph.D. Mathematics** – SRM University – 2023
- **M.Phil. Mathematics** – Mother Teresa Women's University – 2014
- **B.Ed Mathematics** – Tamilnadu Teachers Education University - 2012
- **M.Sc. Mathematics** – University of Madras - 2011
- **B.Sc. Mathematics** – University of Madras– 2009

Areas of Research:

• Formal Languages and Automata Theory

• Pattern Recognition

• Image Processing

• Cellular Automata

List of Papers Selected Publications:

- **K. Janaki** and R. Krishna Kumari, Exploring iterated morphisms on words: Analysis using subwords and Parikh matrices, Mathematics in Engineering, Science and Aerospace 16(4) (2025), 1343 – 1353.
- R. Krishna Kumari and **K. Janaki**, Rich partial words: Theory and applications, Mathematics in Engineering, Science and Aerospace 16(4) (2025), 1085-1098.
- **K. Janaki**, M. Sivaji, R. Suresh, R. Elayaraja and S. Felixia, Parikh q-Matrices for Circular Words, IAENG International Journal of Computer Science, 52(4) (2025), 1023--1029.
- **K. Janaki**, M. Sivaji, R. Suresh, R. Elayaraja and S. Felixia, Parikh q-Matrices for Circular Words, IAENG International Journal of Computer Science, 52(4) (2025), 1023--1029.
- **K. Janaki**, R. Krishna Kumari, S. Marichamy, S. Felixia and R. Arulprakasam, Algebraic aspects of generalized Parikh matrices on partial words, IAENG International Journal of Computer Science 51(3) (2024), 232--242.
- R. Krishna Kumari, **K. Janaki** and R. Arulprakasam, Analysis of Traffic Conflicts in Signalized Intersections Using Cellular Automata, Communications in Computer and Information Science 2021 (2024), 31--44.
- R. Krishna Kumari, **K. Janaki**, P. Mahimairaj and S. Murugan, Credit card fraud detection with advanced graph-based machine learning techniques, Indonesian Journal of Electrical Engineering and Computer Science, 35(3) (2024), 1963-1975.
- R. Krishna Kumari, **K. Janaki**, J. Lakshninarayanan and P. Mahimairaj, Enhancing algorithmic reasoning and critical thinking through game-based learning: A graph theory approach, Multidisciplinary Reviews, 7(10) (2024).
- R. Pitchai, S.K. Tiwari, R. Krishna Kumari, **K. Janaki**, P. Patro and S. Murugan, Convergence of Artificial Intelligence and Self Sustainability: Ethical Considerations and Social Implications. In

Technological Advancements in Data Processing for Next Generation Intelligent Systems, IGI Global, (2024), 107--140.

- R. Arulprakasam, R. Krishna Kumari, **K. Janaki**, L. Jeyanthi and P. Madhusoodhanan, Properties of variants of Lyndon partial words, IAENG International Journal of Computer Science, 51(3) (2024), 282--291.
- R. Krishna Kumari, **K. Janaki** and R. Arulprakasam, Block inversion on finite rich p- words, Journal of Interdisciplinary Mathematics 27(1) (2024), 109--120.
- P. Madhusoodhanan, S. Felixia, **K. Janaki** and R. Krishna Kumari, Leveraging graph machine learning for predicting traffic congestion and optimizing vehicle routing, Asian Pacific Journal of Mathematics 11 (2024), 1--12.
- R. Krishna Kumari, **K. Janaki** and R. Arulprakasam, Block inversion on p-words with zero palindromic defect, International Journal of Applied Mathematics 36(5) (2023), 639– 649.
- **K. Janaki**, R. Krishna Kumari and R. Arulprakasam, Algebraic aspects of extending Parikh matrices of picture arrays, Mathematics in Engineering, Science and Aerospace 14(4) (2023), 1139–1159.
- **K. Janaki**, R. Arulprakasam and V.R. Dare, Prouhet array morphism and Parikh q− matrix, Journal of Applied Mathematics and Informatics 42(2) (2023), 345-362.
- R. Krishna Kumari, L. Jeyanthi, **K. Janaki**, R.Arulprakasam and P. Madhusoodhanan, Properties of Cover and Seed of Partial Words, IAENG International Journal of Applied Mathematics 53(3) (2023), 1132-1137.
- **K. Janaki**, R. Arulprakasam, P. Meenakshi and V.R. Dare, Algebraic properties of Parikh q− matrices on two-dimensional words, Lecture Notes in Computer Science, Springer 13348 (2023), 171-188.
- **K. Janaki**, Wen Chen Teh and R. Arulprakasam, Parikh q− matrix under prouhet morphism, South East Asian Journal of Mathematics and Mathematical Sciences 21 (2022), 87-98.

- K. Janaki and R. Arulprakasam, Tiling systems and domino systems for partial array languages, IAENG International Journal of Applied Mathematics 52(2) (2022), 418-425.
- G. Muhiuddin, K. Janaki, D. Al-Kadi, R. Arulprakasam and V. Govindan, On subclasses of recognizable ω ω− partial array languages, Journal of Mathematics 2022 (2022), 1-11.
- K. Janaki, R. Arulprakasam and V.R. Dare, Generalized Parikh matrices of picture array, Journal of Mathematical and Computational Science, 11(2) (2021), 1955-1969.
- K. Janaki, R. Arulprakasam and V.R. Dare, 2D words and generalized Parikh matrices, Journal of Physics: Conference Series, 1850(1) (2021), 012004.
- K. Janaki, R. Arulprakasam and V.R. Dare, Parikh prime vector in partial word, AIP Conference Proceedings 2277 (2020), 005-014.

List of Papers Presented in International/National Conference:

- Presented a paper titled "**Analysis of Traffic Conflicts in Signalized Intersections using Cellular Automata**" **in Asian Symposium on Cellular Automata Technology (ASCAT 2024)** held during 29th February to 2nd March 2024, organized by National Institute of Technology, Durgapur, India.
- Presented a paper titled "**Algebraic Properties of Parikh q-matrices of Two-Dimensional Words**" in **International Workshop on Combinatorial Image Analysis (IWCIA 2022)** held during 13th June to 15th June 2022, organized by MIFT Department, University of Messina.
- Presented a paper titled "**Prouhet Array Morphism and Parikh q-Matrix**" in **Dr. Paarivendhar Research Colloquium** held during 24th March to 26th March 2022, organized by Directorate of Research, SRMIST.
- Presented a paper titled "**Generalized Parikh q- matrices of Picture Array**" in the **International Conference on Mathematical Techniques and Applications (e-ICMTA2022)** held during 23rd March to 25th March 2022, organized by Department of Mathematics, SRMIST.
- Presented a paper titled "**Parikh q−matrix under Prouhet morphism**" in **International Conference on Mathematical Sciences and Applications (ICMSA2022)** held during 9th to 11th March 2022, organized by St. Joseph's College, Thirichirapalli.
- Presented a paper titled "**Generalized Parikh Q-Matrices of Picture Arrays**" in **Dr. Paarivendhar Research Colloquium** held during 3rd to 5th March 2021, organized by Directorate of Research, SRMIST.

- Presented a paper titled "**Parikh Prime Vector in Partial words**" in the **International Conference on Mathematical Techniques and Applications (ICMTA2020)** held during 30th January to 1st February 2020, organized by Department of Mathematics, SRMIST.
- Presented a paper titled "**Two-Dimensional Digitized Picture Array and Subword Indicators**" in the 2nd **International Conference on Mathematical Modeling and Computational Methods in Science and Engineering (ICMMCMSE2020)** held during 22nd to 24th January 2020, organized by School of Mathematics, Alagappa University.
- Presented a paper titled "**Parikh and Generalized Parikh Prime p-words**" in **Dr. Paarivendhar Research Colloquium** held during 23rd to 25th September 2019, organized by Directorate of Research, SRMIST.
- Presented a paper titled "**Parikh Prime Partial Words and Generalized Parikh Prime Partial Words**" in the **National Conference on Advances in Science, Humanities and Technology (NCAST2019)** held during 11th and 12th July 2019, organized by Department of Mathematics, Saveetha Institute of Medical and Technical Science.

Academic Experience:

1. Assistant Professor, Ramapuram Campus, SRM Institute of Science and Technology (formerly known as SRM University), Chennai since June 2025.
2. Assistant Professor, Chennai Institute of Technology, Chennai from January 2025 to May 2025.
3. Assistant Professor, Saveetha Engineering College, Chennai from November 2022 to October 2024.
4. Assistant Professor, Bharath Institute of Higher Education and Research (formerly known as Bharath University), Chennai from August 2014 to July 2017.

Membership:

- International Association of Engineers (IAENG) – Life Member, 2023
- All India Council for Technical Skill Development- Life Member, 2023
- International Association of Electrical, Electronic and Energy Engineering (IAEEEE) – Life Member, 2023