# Senthilkumar Vijayakumar

**IEEE Senior Member**

LinkedIn:     https://www.linkedin.com/in/senthilkumar-vb/
Google Scholar: https://scholar.google.com/citations?user=m0JuwJgAAAAJ&hl=en
Github: https://github.com/senthilv83/eb1a-ai-it-professional-self-petition
Topmate: https://topmate.io/eb1a_selfpetition/

**EB1A Green Card -
Extraordinary Ability**

## AI Research & Innovation Driving Enterprise Transformation and Business Impact

Mr. Senthilkumar Vijayakumar brings over **18+ years of experience** spanning AI research, enterprise innovation, and applied engineering, with contributions recognized by the **Government of India**, including the prestigious **Excellent Implementable Idea Award**, and by leading global technology forums worldwide. He has delivered **award-winning and patented AI solutions**, published in **IEEE and Elsevier** venues, and is a **renowned invited speaker at NVIDIA GTC and IEEE TEMS**. His work includes **AI systems deployed on India's national supercomputing infrastructure at C-DAC, Pune**, and presented as an **oral session at NVIDIA GTC 2021**, alongside impactful contributions to **healthcare AI and clinical decision support systems** used in real-world settings.

## Education

विज्ञान एवं प्रौद्योगिकी मंत्रालय
MINISTRY OF SCIENCE AND TECHNOLOGY
सत्यमेव जयते

**2007** | **MEng,  Department  of  Electronics & Communication Engineering,  PSG College of Technology, India**
*Master thesis: "TCP/IP Offload Engine using VxWorks and its Performance Analysis leveraging Intel Network Processors"*
*– Supervisor:  Dr. Anusuya K. V, Associate Professor, PSG College of Technology, India*
Research  focus:  Multicore & Network Processor, Real Time Operating Systems (RTOS) and advanced algorithms

**2005** | **BEng, Department of Electronics & Communication Engineering, Coimbatore Institute of Engineering & Technology, India**
*Bachelor thesis: "Data Acquisition and Analysis in unmanned blimps"*
Supervisor: Mr. E. Govindarajaswamy, Scientist, *National Aerospace Laboratories (NAL), Government of India, India*

## US Employment

**Present** | **Data Science – Team Manager, ACE AI & Data Science Team, Kelly Services, USA**
In this role, I am responsible for leading & managing the AI & Data Science team in devising and delivering end to end cutting-edge AI, GenAI & Data Science products and solutions for Kelly's various business units to achieve Business Transformation, Value-driven outcomes, Industry benchmarking and Publishing Novel AI/ML methodologies & approaches in research & technology forums and conferences. I also serve as a key liaison, facilitating effective communication between executives, cross-functional teams, external vendors, and other technology stakeholders within and beyond the organization.

**GenAI Talent & Business Optimization Framework:**
- Led the development of **Generative AI** and **multi-cloud LLM architectures** hosting LLM models like ChatGPT, Gemini, LangChain, and Hugging Face, while driving technical leadership across data engineering, data science, AI, and GenAI workstreams.
- Engineered **Agentic AI**, **Knowledge Graph (KG)** and **Graph Retrieval-Augmented Generation (Graph-RAG)** solutions to streamline business operations, enabling advanced contextual search, intelligent matching, and information retrieval for enhanced decision-making and automation.
- Spearheaded the design and development of **GRACE**, Kelly's enterprise AI platform recognized in Forbes by CIO Sean Perry as "a lightweight AI interface built internally" that supports **5,000+ users** on just **$700/month of AI spend**
  https://www.forbes.com/sites/peterhigh/2025/06/25/inside-kelly-services-tech-and-ai-journey-with-cio-sean-perry/

**Forbes**

- Established new **industry benchmarks** in AI productivity tools with **telemetry-driven performance analytics**.
- **Led the team and positioned Kelly at the forefront of AI innovation, earning recognition as a Finalist for the 2023 Databricks Data Team Disruptor Award.** This achievement highlights our groundbreaking work in AI-driven productivity, business transformation, and scalable AI solutions.
  https://www.databricks.com/blog/accelerating-business-data-analytics-and-ai-announcing-finalists-2023-databricks-data-team

## India Employment

**2021** — **AI Innovations Head - HiTech CTO Engineering Team, TATA Consultancy Services (TCS), India**
During this tenure with TCS, I was Heading AI, Data Science, and Analytics Practice for HiTech CTO Engineering Team with innovative, driving for results & value, growth & transformation through product engineering mindset to develop & focus on the delivering novel AI/ML powered cut-edge products and platforms to meet TCS internal product design & engineering. responsible for product IP certification, filed Indian & US patents and publishing novel ai/ml methodologies & approaches in research & technology forums and conferences.

**2015** — **Sr. Research Engineer, Toshiba Software India Private Limited, India**
My responsibilities involved in predictive modeling to predict the failure of Active Shield Gradient Coil (ASGC) in MRI machine before 2 months from the machine logs.

**2013** — **Research Analyst, TATA Consultancy Services, India**
Involved in design and development of ML innovative products, published research work in SNIA SDC and IEEE Conferences and filed Indian & US patent on the developed innovative products.

**2007 -2012** — **Technical Architect, Distributed Computing Lab, TCS-EMC USA**
Responsible for executing and optimizing algorithms, conducting performance benchmarking, and managing Hadoop and Spark clusters to evaluate system scalability and efficiency.

## Awards & Recognitions

**2023** Under the leadership of Mr.Senthilkumar, the Kelly ACE Data Science Team has achieved significant recognition and emerged as one of the finalist for the **prestigious 2023 Databricks Data Team Disruptor Award**.

**2021** **Special Initiative Award** from TATA Consultancy Services for winning SAMHAR-COVID-19 hackathon.

**2021** **Certificate of Excellence** for Inspire Program (2019 -21) from TATA Consultancy Services.

**2020** The **Government of India** recognized the exceptional work of Mr. Senthilkumar's led **"TCS-Tridents"** team and awarded them the **prestigious Excellent Implementable Idea Award** in the final stage of the SAMHAR-COVID-19 hackathon for developing a **Deep Learning–based framework for detecting lung infection stages caused by COVID-19 using CT scan data**. The solution was successfully deployed on **India's national supercomputing infrastructure at C-DAC, Pune**, and was presented as an **oral presentation at NVIDIA GTC 2021**.

**2018** **Innovation Pride Award** from TATA Consultancy Services for becoming semifinalist in TATA Innovista 2018.

## USPTO Patents – Solo Inventor

**2025** **Granted:** US20210295155A1 - "Method and system for transfer learning-based object detection"
**2014** **Granted:** US8922097B2 - "Process of generating power from hard disk vibrations"

## Indian Patents – First Inventor

**2025** **Granted:** IN 202121010090 - "Method and System for Context-aware Entity Extraction for Matching Resumes and Job Descriptions", **Senthilkumar Vijayakumar**, GARG Monika Shalabh, CHAUDHARY Akshay, SP Gowtham Kumar

**2022** **Granted:** IN 386555 - "Optimizing Gene Sequence Alignment in Cloud", **Senthilkumar Vijayakumar**, Anjani Bhargavi, Uma Praseeda, Syed Azar Ahamed

**2019** **Granted:** IN 201921042197 - "Deep Learning RNN LSTM Models for Detecting Cyber Security Attacks, Generating

| | |
|---|---|
| | Threat Patterns and Recommending Solutions" **Senthilkumar Vijayakumar**, SP Gowtham Kumar, SINGH Raj Vijayraj, NIGAM Navneet |
| 2013 | **Filled: Co-Inventor** IN2013MU02794A - "Hardware Failure Prediction System", Rohit Kumar, **Senthilkumar Vijayakumar**, Syed Azar Ahamed |

## Book Chapters – In-print

### 2025

**Book Chapter** **Solo-authored** book chapter titled *"Revolutionizing COVID-19 Diagnosis: A Hybrid Quantum Neural Network-based Framework for Accurate Detection of Lung Abnormalities from CT Scans using Custom Computer Vision model and AI Edge Device"* for publication in the esteemed edited volume *"Edge AI for Industry 5.0 and Healthcare 5.0 Applications: The Key Motivations, Enabling Technologies, and Platforms"* by CRC Press in 2025. https://books.google.com/books?id=O_NGEQAAQBAJ&pg=PA36&source=gbs_toc_r&cad=2#v=onepage&q&f=false

## First Author Publications

### 2025

**Conference** First-authored paper titled *"A Clinical Informatics Framework for Myeloid Oncology: Scalable AI and LLM Integration for Adaptive Trial Management and Automated FDA Compliance"* was **accepted & presented** at the **IEEE PuneCon 2025**, held on 12–15 December 2025, Savitribai Phule Pune University , Pune, India.

**First-authored** paper titled "Quantum-Enhanced Hybrid CNN–QNN Framework for Intelligent Rice Disease Diagnosis and Real-Time Field Recommendations on Edge AI Devices" **published** at the *2025 IEEE 7th Symposium on Computers & Informatics (ISCI 2025)*, held on August 9, 2025, Concorde Hotel, Kuala Lumpur, Malaysia**.** https://ieeexplore.ieee.org/document/11167361

**First-authored** paper titled *"A Novel Hybrid CNN–Quantum Neural Network Framework with Quantum Acceleration and Error Correction for High-Precision Breast Cancer Classification on AI Edge Devices"* **published** at 2025 IEEE 6th Annual World AI IoT Congress (AIIoT), Seattle Convention Center, Seattle, WA, USA, May 28–30, 2025.

https://ieeexplore.ieee.org/document/11105361

### 2023

**Conference** **Solo-authored** paper titled *"A Hybrid QNN-Based Framework for Accurate Early Detection of HCV Liver Abnormalities from CT Scans using Custom Transfer Learning and AI Edge Device"* at IEEE TENSYMP (2023) Organized by IEEE Region 10 and UNSW Canberra at the Australian Defence Force Academy (ADFA).

https://ieeexplore.ieee.org/document/10223624

### 2024

**Conference** **Senthilkumar Vijayakumar**, Filious Louis, paper titled *"Revolutionizing Staffing and Recruiting with Contextual Knowledge Graphs and QNLP: An End-to-End Quantum Training Paradigm"* at 2023 IEEE International Conference on Knowledge Graph (ICKG).

https://ieeexplore.ieee.org/abstract/document/10412761

### 2022

**Poster** **Senthilkumar Vijayakumar**, Filious Louis, Shaunak Pai Kane and Jeevarathinam Balachandar *"Contextual*

*and Spatial Attention Model: Transfer Learning based Hybrid QNN Paradigm for Computer Vision Applications"* poster published in IEEE Quantum Week — the IEEE International Conference on Quantum Computing and Engineering (QCE), Pages 756-758, September 2022, Broomfield, Colorado, USA. https://ieeexplore.ieee.org/abstract/document/9951217

### 2021

**Oral** **Senthilkumar Vijayakumar,** Akshay Chaudhary and Dhirajkumar R *"DL based detection of Lung Infection stages caused by COVID-19 using CT Scan data"* oral presentation in NVIDIA GTC (GPU Technology Conference) 2021, April 2021, USA

### 2019

**Conference** **Senthilkumar Vijayakumar,** S.P Gowtham Kumar, Navneet Nigam and Raj Vijay Raj Singh *"An Novel Approach in Designing a Security Workbench with Deep Learning Capabilities and Process Automation"* published in IEEE TENCON 2019 , IEEE Region 10 Conference (TENCON) , Pages 263-268, Oct 2019, India

. https://ieeexplore.ieee.org/document/8929691

### 2012

**Conference** **Senthilkumar Vijayakumar,** Anjani, Uma and Syed Azar *"Optimizing Sequence Alignment in Cloud using Hadoop and MPP Database"* published in the conference IEEE CLOUD 2012, 5th International Conference on Cloud Computing, Pages 819-827, June 2012, Honolulu, Hawaii, USA.

https://ieeexplore.ieee.org/document/6253584?arnumber=6253584

**Oral** **Senthilkumar Vijayakumar,** Anjani, Uma and Syed Azar *"Optimizing Sequence Alignment in Cloud using Hadoop and MPP Database"* oral presentation in SNIA Storage Developer Conference (SDC) 2012, September 2012, USA.

### 2010

**Oral** **Senthilkumar Vijayakumar,** *"Process of Generating Power from Hard disk Vibration in Datacenters"* oral presentation in SNIA Storage Developer Conference (SDC) 2010, September 2010, Santa Clara, USA.

## Co-author Publication

### 2024

**Journal** **Nasar Ata,** Insha Zahoor, Nasrul Hoda, Syed Mohammed Adnan, **Senthilkumar Vijayakumar**, Filious Louis, Laila Poisson, Ramandeep Rattan, Nitesh Kumar, Mirela Cerghet, Shailendra Giri. "*Artificial neural network-based prediction of multiple sclerosis using blood-based metabolomics data*". **Multiple Sclerosis and Related Disorders,** Volume 92, December 2024, Article 105942. © 2024 Published by Elsevier. https://www.sciencedirect.com/science/article/pii/S2211034824005182

### 2014

**Conference** Rohit Kumar , **Senthilkumar Vijayakumar** and Syed Azar *"A Pragmatic Approach to Predict Hardware Failures in Storage Systems using MPP Database and Big Data Technologies"* published in the conference IEEE International Advance Computing Conference (IACC), Pages 779-788, November 2014, India.

https://ieeexplore.ieee.org/document/6779422?arnumber=6779422

## Talks – IEEE Events

- Invited expert industry speaker to present a topic on *"Quantum Neural Network Application for Healthcare"* organized by IEEE Technology and Engineering Management Society (TEMS) LAIF 2023 Latin American Industry Forum on May 30th and 31st, 2023.
- Invited industry speaker to present a topic on *"Analysis of COVID-19 and Health Care Problems using AI"* organized by IEEE Hyderabad Quantum Computing Special Interest Group (SIG) is an initiative under the Computer Society Chapter of IEEE Hyderabad Section and CS IDEATE Hackathon team, April 2020.
- Invited to give a plenary session as an industry expert on "Transfer Learning for AI Applications" at the All-Hyderabad Section Computer Society Student Congress (IEEE AHCSSC 2019), which is the yearly congress of the IEEE Computer Society Chapter of Hyderabad Section. This flagship event of the IEEE CS Chapter was held on January 3-5, 2019, at Vardhaman College of Engineering in Hyderabad.

## Resource Person - Student & Faculty Development Programs

- **Judge** for *"IEEE TEMS Global Student Case Competition 2025 USA"*, Recognized for contributing time and expertise in evaluating global student submissions as part of the IEEE Technology and Engineering Management Society (TEMS) competition.
- Resource person towards Online Guest Lecture on *"AI & Edge Computing for Healthcare"* in July 2023 to the undergraduate students of B. Tech. (Electronics & Communication Engineering) of Vellore Institute of Technology, Vellore, India.
- Resource Person in 5 Days Virtual FDP on *"Developing Potentials in Emerging Technologies"* from 27th Dec 2021 to 31st Dec 2021 and delivered a talk on *"Advanced Deep Learning"* on 29th Dec 2021 Organized by Department of Computer Science with Cognitive Systems (Integrated with TCS), Sri Ramakrishna College of Arts and Science (Autonomous), Coimbatore.
- Resource person during One-week Short Term Training Program on *"Advanced Deep Learning Techniques with Python"* in August 2020 organized by Department of Computer Science & Engineering, Anurag Group of Institutions, Hyderabad, India.
- Resource person towards *"Deep Learning in Computer Vision: Case Studies"* in All India Council for Technical Education (AICTE) Sponsored Two Weeks Online Faculty Development Program (FDP) on *"Deep Learning in Image and Computer Vision Applications"* for Series I - 28th October 2020 to 10th November 2020 organized by Department of Computer Science & Engineering Sri Krishna College of Technology, Coimbatore, India.
- Contributed to sharing knowledge in two days national seminar in association with The Gujarat Council on Science and Technology (GUJCOST), Government of Gujarat on "*Artificial Intelligence & It's Applications*" organized by Institute of Advanced Research, Gandhinagar on 23-24th October 2020.
- Resource person towards "*Deep Learning in Computer Vision: Case Studies*" in All India Council for Technical Education (AICTE) Sponsored Two Weeks Online Faculty Development Program (FDP) on "*Deep Learning in Image and Computer Vision Applications*" for Series II – 7th December 2020 to 19th December 2020 organized by Department of Computer Science & Engineering Sri Krishna College of Technology, Coimbatore, India.
- Resource person towards Conducting Student Workshop for students at Institute of Engineering and Technology (IET), Lucknow on "*Data Science and Applications of Data Science*" on March 2019 organized by TCS.

## Review Experience

- 3rd IEEE International Conference on Networks, Multimedia, and Information Technology (*IEEE NMITCON-2025*), organized by **Nitte Meenakshi Institute of Technology,** Bengaluru, India, in association with the **IEEE Bangalore Section,** August 1–2, 2025.
- *3rd International Conference on Data Science and Information Systems (ICDSIS-2025)*, May 17–18, 2025 organized by **Malnad College of Engineering,** Hassan, India in association with the **IEEE Bangalore Section** and **IEEE Mysore Subsection.**
- *International Conference on Intelligent Computing and Knowledge Extraction (*ICICKE2025*)*, June 6–7, 2025 organized by **CMR University**, Bengaluru, Karnataka, India in association with the **IEEE Bangalore Section.**
- IEEE 4th Annual Flagship India Council International Subsections Conference (INDISCON-2023), a prestigious international conference organized by IEEE India Council and IEEE Mysore Subsection under IEEE Bangalore Section.
- IEEE International Conference on Artificial Intelligence in Engineering and Technology (IICAIET2023), organized by IEEE Sabah subsection and co-organized by the Artificial Intelligence Research Unit and Universiti Malaysia Sabah (UMS).
- IEEE International Conference on Applied Intelligence and Sustainable Computing (ICAISC-2023) conference in

association with IEEE Bangalore Section.

- IEEE International Conference on Data Science and Network Security (ICDSNS-2023), in association with IEEE Bangalore Section.
- IEEE International Conference on Networks, Multimedia, and Information Technology (NMITCON-2023), in collaboration with the IEEE Bangalore Section and All-India Council for Technical Education (AICTE).
- IEEE International Conference on Recent Advances Science and Engineering Technology (ICRASET-2023) in collaboration with the IEEE Bangalore Section and All-India Council for Technical Education (AICTE).
- International Conference on Evolutionary Algorithms and Soft Computing Techniques on (EASCT-2023) Technical co-sponsored by the IEEE Bangalore Section
- International Conference on Ambient Intelligence, Knowledge Informatics and Industrial Electronics (AIKIIE-2023) Technical co-sponsored by the IEEE Bangalore Section.
- International Conference on Artificial Intelligence and its Application (ICAIA - 2023), hosted by Springer Communications in Computer and Information Science (CCIS).

## Smart India Hackathon (SIH) - Review Experience

| 2020 | Served as a **jury** for the internal Smart India Hackathon (SIH) 2020 organized in Sri Krishna College of Technology, India assessed over 100 entries and selected the top 10 teams to advance and compete in the highly anticipated SIH 2020 finale. |
| 2019 | Acted as an **evaluator SIH 2019** and **mentorship and guidance**, students from Sri Ramakrishna College of Arts and Science for Women (SRCW), India formed the "Cyber Thug Squad" team for SIH 2019, winning the world's largest hackathon. Under the guidance, SRCW produced the first-ever winning team at the Smart India Hackathon, showcasing the effectiveness of his mentorship and the students' capabilities. |
| 2018 | Acted as an **evaluator SIH 2018** and **mentorship and guidance**, students from Sri Krishna College of Technology, India formed the "Crop Docs" team, which achieved remarkable success by being shortlisted from thousands of entries for the finale of SIH 2018 hackathon. |

## AICTE - Board of Studies Member

| 2021 | Served as a Board of Studies member for the Department of Computer Science & Engineering, Sri Krishna College of Technology, Coimbatore, India affiliated with the All-India Council for Technical Education (AICTE). |
| 2019 | Served as a Board of Studies member for the Department of Computer Science & Engineering, KPR Institute of Engineering and Technology, Coimbatore, India affiliated with the All-India Council for Technical Education (AICTE). |
| 2017 | Served as a Board of Studies member for the Department of Computer Science & Engineering, Sri Krishna College of Technology, Coimbatore, India affiliated with the All-India Council for Technical Education (AICTE). |

## News Coverage

- Accelerating Business with Data, Analytics and AI - Announcing the Finalists for the 2023 Databricks Data Team Disruptor Award: https://www.databricks.com/blog/accelerating-business-data-analytics-and-ai-announcing-finalists-2023-databricks-data-team
- Team "TCS-Tridents" winning Excellent Implementable Idea Award in SAMHAR-COVID19 Hackathon in NVIDIA News Technical Blog Post: https://developer.nvidia.com/blog/government-of-india-nvidia-and-openacc-hackathon-helps-develop-covid-19-solutions/
- Industry expert speaker for IEEE Technology and Engineering Management Society (TEMS) LAIF 2023 Latin American Industry Forum:
  https://www.linkedin.com/posts/ieeetems_tems-latinamerican-forum-may-30-31-speakers-activity-7065720553021546496-52wE
  https://www.linkedin.com/posts/ieeetems_communication-and-quantum-computing-speakers-activity-7067302032197455872-0jHT
  https://twitter.com/ggiannaTW/status/1649507530945581056
- Speaker for IEEE Hyderabad Quantum Computing Special Interest Group (SIG):
  https://ieeehyd.org/wp-content/uploads/2021/04/computer-society.pdf
- Plenary talk as an industry expert organized by All-Hyderabad Section Computer Society Student Congress (IEEE AHCSSC 2019):
  https://newsletter.ieeeindiacouncil.org/wp-content/uploads/sites/150/Jan-to-Mar-2019.pdf
- Featured Speaker in Storage Developer Conference 2012 organized by Storage Networking Industry Association (SNIA): https://www.snia.org/events/storage-developer2012/speakers#Vijayakumar