Mohana Murugan

Contact Details: mohanamurukan@gmail.com (+91) 96775-74864
Website: https://github.com/Mohana-AI
Language: English (Proficient), Tamil (Bilingual)

PROFILE

A diligent researcher in the area of Artificial Intelligence, developing new approaches to solving complex problems across various disciplines with the aim of actively contributing to high-quality scientific research.

RESEARCH INTERESTS

Computer Vision | Machine Learning | Deep Learning | Explainable Artificial Intelligence (XAI) | Data Analytics| Affective Computing | Design Thinking | TinyML | Data Science | Mulsemedia | Medical Image Processing | Physiological Signal Processing | Natural Language Processing | Big Data | Multimodal Data Analysis | BCI

EDUCATION

2021-2024 **Avinashilingam University and Brunel University – Ph.D. in Computer Science** India, UK
- Supervised by **Prof.P.Subashini** and Co- Supervised by **Prof. George Ghinea**
- Thesis topic: *E-Learning in Mulsemedia*

2018-2020 **Bharathiar University – Master of Philosophy (M.Phil.) in Computer Science** India
- Supervised by **Prof.S.M.Jagatheesh**
- Thesis topic: *Active Permission Identification for Android Malware Application Detection*
- Passed with Distinction

2015-2018 **Bharathiar University – Master of Computer Application (MCA)** India
- GPA: 8.61 (10.0 scale)
- First Class with Distinction
- 1st out of 30 students

2012-2015 **Bharathiar University – Bachelor of Science in Computer Science** India
- GPA: 7.53 (10.0 scale)
- First Class with Distinction

PROFESSIONAL EXPERIENCES

2023-2024 **Senior Research Fellow (SRF)** India, UK
- Supervised by **Prof.P.Subashini** and Co- Supervised by **Prof. George Ghinea**
- Co-mentor by **Prof. Celso Alberto Saibel Santos**, Federal University of Espírito Santo (UFES), Brazil.
- Research on the analysis of learner's Quality of Experience (QoE) based on Mulsemedia E-learning using deep learning techniques.
- Research on Mulsemdia in E-learning and analyse learners' affective state while learning.
- Developing a Mulsemedia kit for E-learning based on IoT.

2021-2023 **Junior Research Fellow (JRF)** India, USA
- Supervised by **Prof.P.Subashini** at Avinashilingam University.
- Co-Supervised by **Prof.Diksha Shukla** at the University of Wyoming, USA
- Developing a Facial Emotion Recognition kit based on IoT and Proposed hybrid CNN-LSTM model for emotion recognition from facial expressions in an e-learning system.
- Research on adaptive learning for developing Kidbot 1.0, which aims to teach AI concepts to primary school children.

2019-2020 **Programming Trainer at CSC Computer Education** India
- Providing training in a programming language (C, C++, Python, JAVA, PHP) to students who aim to secure industry placements.
- Constructing syllabus, course, and assessment preparation materials for placement training students.

Mohana Murugan

RESEARCH PUBLICATIONS
*denotes equal contribution and joint lead authorship

BOOK CHAPTERS

Springer	Technology Enhanced Mulsemedia Learning (TEML) Through Design for Learners with Dyslexia for Enhancing the Quality of Experience (QoE)	2024

M.Mohana*, Aleph Campos da Silveira*, P.Subashini, Gheorghita Ghinea,Celso Alberto Saibel Santos. *Envisioning the Futures of Education Through Design, Springer*

IGI Global	Review on Artificial Intelligence and Robots in STEAM Education for Early Childhood Development: The State-of-the-Art Tools and Applications	2022

Mohana M, Nandhini, K., Subashini, P.

Handbook of Research on Innovative Approaches to Early Childhood Development and School Readiness, edited by Anastasia Lynn Betts and Khanh-Phuong Thai, IGI Global, 2022.

JOURNALS

CI	XAI: Explainable-based Deep Semi-Supervised Convolutional Sparse Autoencoder for Enhancing Facial Expression Recognition		

Mohana Murugan, Parthasarathy Subashini, Gheorghita Ghinea
Computational Intelligence, Wiley   *(Under Review)*   2024

TLT	Towards Enhancing STEM Learner Experience by Leveraging Mulsemedia Technology

Mohana Murugan, Aleph Campos da Silveira, Parthasarathy Subashini, Celso Alberto Saibel Santos, Gheorghita Ghinea
IEEE Transactions on Learning Technology, IEEE   *(Under Review)*   2024

NPL	Performance Comparison of Autoencoders in Facial Emotion Recognition from Facial Expression	*(Under Review)* 2024

M.Mohana, P.Subashini,   *Neural Processing Letter, Springer*

ELDM	Empowering Young Learners: M-Learning Application with Adaptive Learning and CCI Standards	*(Under Review)* 2024

S.Divyasri, **M.Mohana*,** T.T.Dhivyaprabha; P, Subashini
Journal of Research in International Education, SAGE Publishers.

SN	Facial Emotion Recognition from Facial Expression Using Machine Learning and Deep Learning Techniques: A Systematic Literature Review	*(Accepted)* 2024

M.Mohana, P.Subashini,   *SN Computer Science, Springer*

JIFS	Revisiting Face Detection: Supercharging Viola-Jones with Particle Swarm Optimization for Enhanced Performance	*(Accepted)* 2024

M.Mohana, P.Subashini, Diksha Shukla
Journal of Intelligent & Fuzzy Systems, IOS Press

IJPRAI	Emotion Recognition from Facial Expression using Hybrid CNN-LSTM Network.	2023

M.Mohana, P.Subashini, M.Krishanveni   *(Published)*
International Journal of Pattern Recognition and Artificial Intelligence. World Scientific

CONFERENCES

Springer	Technology Enhanced Mulsemedia Learning: Insights of an Evaluation

M.Mohana, Aleph Campos da Silveira, P.Subashini, ,Celso Alberto Saibel Santos, Gheorghita Ghinea
In proceeding with the International Conference on Computer-Human Interaction Research and Applications, Rome-Italy, Nov 16-17, 2023.   2023

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IEEE	A Study on Technology-Enhanced Mulsemedia Learning for Enhancing Learner's Experience in E-Learning	2023

M.Mohana, N. Valliammal, V.Suvetha, M.Krishnaveni, P.Subashini, Gheorghita Ghinea
In proceeding of the International Conference on Network, Multimedia and Information Technology (NMITCON, Bangalore (Accepted for Publication)

Springer	Convolutional Sparse Autoencoder for Emotion Recognition.	2023

M.Mohana, P.Subashini.
In proceeding of the International Conference on Artificial Intelligence and Computer Vision, (AICV2023), Marrakesh, Morocco, 2023. https://doi.org/10.1007/978-3-031-27762-7_1

IEEE	Emotion Recognition using Deep Stacked Autoencoder with Softmax Classifier	2023

M.Mohana, P.Subashini.
In proceeding to International Conference on Artificial Intelligence and Smart Systems and Smart Systems. Coimbatore, India. https://doi.org/10.1109/ICAIS56108.2023.10073937

IEEE	Emotion Recognition using Autoencoders: A Systematic Review	2023

M.Mohana, P.Subashini.
In proceeding of International Conference on Intelligent Systems for Communication, IoT, and Security. Coimbatore, India. https://doi.org/10.1109/ICISCoIS56541.2023.10100563

WORKSHOP

ACM	Technology Enhanced Mulsemedia Learning (TEML) for Learners with Dyslexia	2023

M. Mohana*, Aleph Campos Da Silveira*, V. Suvetha, P. Subashini, Gheorghita Ghinea, and Celso Alberto Saibel Santos.
In ACM International Conference on Interactive Media Experiences Workshops (IMXw '23), June 12–15, 2023, Nantes, France. ACM, New York, NY, USA.

PATENT

▪ KIDBOT 1.0, Application no. - 202241029718 – Published, May 2022	2022

CERTIFIED COURSES
- IBM Data Science Professional (2024)
- Affective Computing – NPTEL (IITM), India (2024)
- Google Data Analytics Professional (2022)
- Google Certified Educator – Level 1 (2022)

HONORS AND AWARDS
FELLOWSHIP
- University Grants Commission (UGC)-NET | India (2021-2026)

ACHIEVEMENTS
- Qualified UGC NET with JRF in the June 2020 exam.
- Secured First Rank in Master of Computer Science.
- School First in SSLC exam in Public School, Tamil Nadu, India

AWARD
- Won first place in Innovative Ideas to Products at National Science Day Celebrations, Coimbatore. (2023)

INVITED TALKS
- Invited talk at Avinashilingam University on Mulsemedia in Education in Short Term Capacity Building Programme on Artificial Intelligence in Education (2023).
- Invited talk at Avinashilingam University on Chat-GPT and Education in Short Term Capacity Building Programme on Artificial Intelligence in Education (2023).

Mohana Murugan

- Invited talk at Avinashilingam University on "Systematic Review and Meta-Analysis (SRMAs) using PRISMA (2023)"
- Invited talk at Gobi Arts and Science College @ Data Analytics through EXCEL (2023)
- Invited talk at Gobi Arts and Science College on Artificial Intelligence and Career Opportunities (2022)

SERVICES
- **Reviewer**
  - International Journal of Computational Intelligence and Applications (IJCIA), World Scientific.
  - Journal of Intelligent & Fuzzy Systems, IOS Press.
- **Mentorship**
  - Mentor for the two-week Summer STEM Camp organized by the U.S. Consulate General Chennai and the Centre for Science in Society (C-SiS), Cochin University of Science and Technology (CUSAT), Kerala, India. (2023)
  - Mentor for Post Graduate students Project at CMLI lab, Coimbatore, India (2023).
- **Subject Expert**
  - Nominated as a member of the Board of Studies in Computer Science (Artificial Intelligence and Data Science) at Gobi Arts and Science College, India (2024).
  - Nominated as a member of the Board of Studies in Computer Science (Artificial Intelligence and Data Science) at Gobi Arts and Science College, India (2023).

COMPUTER SKILLS
- **Programming languages:** Python, R, C, C++, Java, PHP, .Net
- **Frontend**: HTML, CSS, Bootstrap, JavaScript.
- **Frameworks:** TensorFlow, Keras, OpenCV, Scikit-learn, NumPy, SciPy, Pandas, Matplotlib
- **Database Systems:** SQL, MySQL

TECHNICAL PROJECTS
- **Technology Enhanced Mulsemedia Learning** web portal using HTML, CSS, and PHP.
- **Tamil Voice-based Educational Bot** using Android Application and Firebase Backend framework.
- **Online Mobile Payment System** using .Net programming and SQL backend framework.
- **E-School Student Management system** using PHP programming language and MySql backend framework.
- **School Vehicle Management System** using Gambos Open-Source framework and MySql backend.

RESEARCH PROFILE
- **Research Gate** – https://www.researchgate.net/profile/Mohana-M-2
- **Google Scholar** – https://scholar.google.com/citations?user=DTGvo_sAAAAJ&hl=en&authuser=1
- **LinkedIn** – https://www.linkedin.com/in/mohana-m-84a435231