



# Krishnan Arumugasamy Muthukumar

☎ (+81) 70-7463-8944 | ✉ muthukumar9890@gmail.com | 📱 Muthukumar17 | 🌐 muthukumar-k-a-6203a41a

## Education

### Keio University (Graduate School of Science and Technology)

Tokyo, Japan

PH.D IN ENGINEERING

Sept. 2019 - Sept. 2022

- AI Healthcare
- Activity and Fall detection Using Infrared Array Sensor.
- Infrared Sensor Stereo Vision.

### Pondicherry University (School of Engineering and Technology)

Pondicherry, India

M.TECH IN COMPUTER SCIENCE AND ENGINEERING

Aug. 2014 - Aug. 2016

- Cloud Computing
- Secure Sharing of Medical Data in Hybrid Cloud Environment

### NIT(National Institute of Technology- Thirucharappalli)

Tirucharappalli, India

B.TECH IN COMPUTER SCIENCE AND ENGINEERING

Jun. 2008 - Jun. 2012

- Edge Detection, Face Detection, Blink Detection

## Skills

<b>Programming</b>	Python, Julia, C/C++, JAVA, Dart, MATLAB, LaTeX
<b>Technologies</b>	Machine Learning, Computer vision, IoT(Raspberry Pi, Jetson), Cloud Computing, Quantum Computing)
<b>Packages</b>	Tensorflow, Keras, Pytorch, OpenCV, Scikit, Matplotlib, numpy, pandas, qiskit
<b>Tools</b>	ROS(Robot Operating System), Google Colab, Openstack, IBM watson, IBM Quantum experience
<b>Languages</b>	Tamil, English, Japanese(Basic level)

## Academic and Industry Experience

### MOTiV Research Co.

Tokyo, Japan

MACHINE LEARNING ENGINEER - COMPUTER VISION

Jan. 2022 - Mar. 2022

- Automatic LiDAR camera calibration
- RGB sensor fusion, point cloud colourizing

### Keio University, Ohtsuki Laboratory

Tokyo, Japan

RESEARCH STUDENT

Apr. 2018 - Sep. 2019

- Build a device with different resolution Infrared Array sensor.
- Activity and Fall detection using infrared array sensor by various machine learning models

### ANZ

Bangalore, India

OPERATION OFFICER

Apr. 2017 - Aug. 2017

- Banking Loan Document Data Analysis

### Dhirubhai Ambani Institute of Information and Communication Technology (DA-IICT)

Gujarat, India

RESEARCH FELLOW

Jun. 2010 - Aug. 2010

- Explored various Ad hoc network mobility models includes Random walk model, Graph based model etc
- Route selection heuristic used in the characterization of mobility models. The factors that influence the behavior of Ad hoc networks and the study of route availability and stability in ad hoc network
- Issues in Qos routing using link and node stability in ad hoc network

### Cosmosoft Technologies Limited

Chennai, India

INTERN

Jun. 2009 - Jul. 2009

- Gained exposure in the fields of JAVA based GUI development, Mobile Technology and Web Technology

## Honors & Awards

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- 2021 **Awarded**, ICM English Session Encouragement Award  
2020 **Awarded**, KLL Research Grant, Keio University  
2018 **Awarded**, Monbukagakusho MEXT Scholarship

*Tokyo, Japan*  
*Tokyo, Japan*  
*Embassy of Japan*

## Publications

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**K A Muthukumar** M. Bouazizi and T. Ohtsuki, "An Infrared Array Sensor-Based Approach for Activity Detection, Combining Low-Cost Technology with Advanced Deep Learning Techniques," *Sensors*. 2022; 22(10):3898. [Paper](#)

**K A Muthukumar** M. Bouazizi and T. Ohtsuki, "A Novel Hybrid Deep Learning Model for Activity Detection Using Wide-Angle Low-Resolution Infrared Array Sensor," in *IEEE Access*, [Paper](#)

**K A Muthukumar**, M. Bouazizi, and T. Ohtsuki, "Comparative Study of Activity Detection System Using Wide Angle Low Resolution Infrared Array Sensor at Different Positions," *Institute of Electronics, Information and Communication Engineers Society Conference*, Online, March, 2021. [Paper](#)

**K A Muthukumar**, M. Bouazizi, and T. Ohtsuki, "Detection of human activity based on hybrid deep learning model using a low-resolution infrared array sensor.," *Institute of Electronics, Information and Communication Engineers Sensor Network and Mobile Intelligence Study Group (SeMI)*, Online, November 27, 2020. [Paper](#)

**K A Muthukumar**, M. Bouazizi, and T. Ohtsuki, "Activity Detection Using Wide Angle Low-Resolution Infrared Array Sensors," *Institute of Electronics, Information and Communication Engineers Society Conference*, Online, September 15, 2020. [Paper](#)

**K A Muthukumar** and M. Nandhini, "Modified secret sharing algorithm for secured medical data sharing in cloud environment," *2016 Second International Conference on Science Technology Engineering and Management (ICONSTEM)*, Chennai, India, 2016, pp. 67-71. [Paper](#)

M. Nandhini, **K A Muthukumar**, "Secured sharing of medical data on hybrid cloud environment," *International Journal of Computer Science and Information Technologies (IJCSIT)*, ISSN: 0975-9646, Vol.7, Feb. 2016.

## Extracurricular Activity

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- Participated in "Accessibility Computing Workshop" conducted by HEPSN-Enabling unit Association of Pondicherry University.
- Participated in "Cloud Computing: OpenStack Implementation for setting Cloud Environment Workshop" conducted by C-DAC Bangalore Government of India.
- Participated in "Cloud computing and Digital Forensics Workshop" conducted Department of Computer Science & Information Systems of BITS Pilani.
- Participated in JavaFX and Netbeans conducted by Sun Microsystems.
- Participated in a "Microcontroller based Robotics Workshop" conducted by EEE Association of NIT-Trichy.
- Participated in "Ethical Hacking and Information Security" workshop conducted by Innobuzz Knowledge solutions.
- Received a Diploma in UNIX, C, C++ from CSC Computer Education.

## Outreach Leadership

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- Member of the National Service Scheme (NSS).
- Member of Spirit-Ed, the socio-economic empowerment student group of the institute that imparts computer education to the children of nearby villages surrounding the Institute.
- Public Relation Coordinator in NITTFEST'10, the Inter-College Cultural festival of NIT Trichy.
- Member of Pragyan Social Responsibility (PSR) at Pragyan'12, the social services wing of Pragyan and was involved in taking classes in the nursery schools of the surrounding villages to educate the poor students.