

**EMERGING FUTURE TECHNOLOGY
TRAINING PROGRAM 2020**

**MIRAI INNOVATION RESEARCH
INSTITUTE JAPAN**



EMFUTECH

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ABOUT MIRAI INNOVATION RESEARCH

Mirai Innovation Research Institute was established with the mission of creating novel research, innovating solutions to problems in human society, and developing emerging future technologies that will impact diverse industries.

In essence, Mirai innovation is focused in analyzing emerging technologies and identify their potential industry, market, environmental and social impact; developing and evaluating innovation and technology strategies; and designing and delivering leading-edge teaching and training courses to equip engineers with the skills to be effective innovators and entrepreneurs.

Mirai Innovation has four main research groups:

- ▶ Artificial Intelligence and Computer Vision
- ▶ Robotics
- ▶ Virtual and Augmented Reality
- ▶ Neurotechnology





At Mirai Innovation we created a neurotechnology product called "Aura".

Aura is a biosignal acquisition technology which acquires data from the brain, muscle or heart. Aura is intended to be used by researchers, bioengineering students, or technology enthusiasts. Aura has its own software where you can see a 3D model of the brain activity in real time. Aura has many applications in areas such as medical rehabilitation, robotics, neuromarketing, entertainment among others.



Laboratory Facilities

Our laboratory is located in TEQS Software Industry Plaza which let us have access to the following facilities:

- ▶ Sound studio (Audio/Visual recording and editing)
- ▶ PC training room
- ▶ Lecture room
- ▶ Meetings rooms
- ▶ Business café



Our laboratory is equipped with technology such as the following:

- ▶ GPU servers (GTX, Titan X)
- ▶ Telepresence mobile robot (Temi Robot)
- ▶ Programmable robotics arms
- ▶ Augmented reality headset (Metaglass)
- ▶ Virtual reality headset (Oculus Rift S)
- ▶ Depth cameras (Kinect, Xtion, Intel Euclid)
- ▶ 180° and 360° cameras: Vuze XR Dual 1VR Camera
- ▶ 3D scanners (Structure sense)
- ▶ Physiological signal acquisition devices for



- ▶ Physiological signal acquisition devices for
 - Brain data: EEG Aura, Museband, open BCI, gTec Unicorn
 - Muscle signals: Myo Band
 - Skin conductance: NeuLog
 - Eye gaze tracking: Tobii-eye tracking
 - Windows Mixed Reality - Head - Mounted Display
- ▶ Windows Mixed Reality - Head - Mounted Display
- ▶ Drones
- ▶ 3D printing
- ▶ Laser cutter engraving machine
- ▶ Microcontroller board / computer: Arduino, Raspberry Pi, Nvidia.
- ▶ Electrical board testing equipment

PROGRAM OVERVIEW

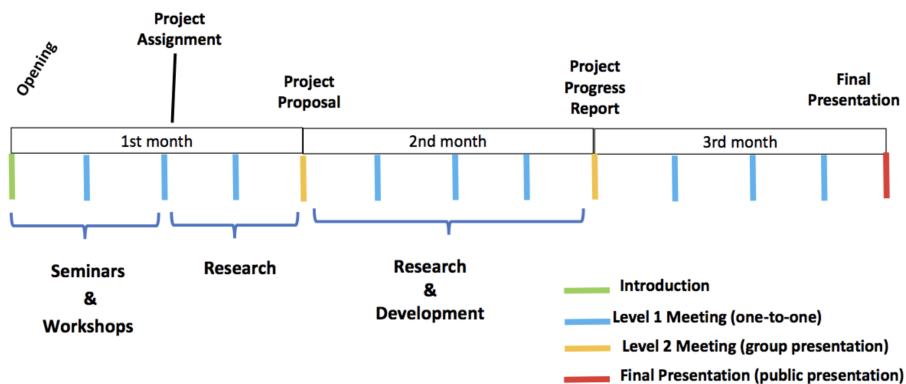
The Emerging Future Technology Training (EmFuTech) Program aims to expose the students to a novel environment full of like-minded people with diverse technical skills that share the common objective of learning about the new trends of technology in diverse fields. The program also aims to train participants to develop projects using emerging technologies such as robotics, augmented reality, artificial intelligence, IoT, Big Data and neuroscience; strengthening their soft and social skills towards scientific, technological innovation and humanity.

The program includes mentoring on emergent tech topics with many seminars and workshops with hands on experience on projects of industries such as telecommunications, mechanical engineering, logistics, finance among others. The program will be conducted in English. It is not necessary to have a specific Japanese level.



Program Duration

The Emergent Future Technology Training Program is a 12 weeks intensive program in which participants will be challenged to learn fast by attending technical seminars and workshops, and put into practice their knowledge by developing industry projects.



Seminars and Workshops

Every year, experts in diverse industries will come to Osaka to share their expertise with student participants. As an example, here is a list of speakers and technology areas of EmFuTech 2019:



▶ Artificial Intelligence

- Naohiro Hayaishi, M. S. Eng, CEO of Keisugiken Corporation.
- Kousuke Takeuchi, Eng, Senior Engineer ok Keisugiken Corporation.
- David Hernandez M.S. Eng., Senior Engineer at Mirai Innovation
- Christian I. Penalzoa Ph.D., CEO of Mirai Innovation

▶ Human-Computer Interaction – AR/VR

- Hideyuki Ando, PhD., Associate Professor, Osaka University
- Miguel Miranda, PhD., Researcher, Mirai Innovation
- Allan Castro, Eng. Team leader, Mirai Innovation

▶ Robotics & Intelligent Systems

- Luis Yoichi Morales, PhD., Associate Professor, Nagoya University
- Photchara Ratsamee, PhD., Associate Professor, Osaka University
- Yasushi Mae, PhD., Professor, Kansai University
- Ueno Shinichiro, Eng., Director of Development, OMRON
- Karan Khokar, PhD., Researcher at Knightscope
- Eduardo Sandoval, PhD., Scientia Fellow, Researcher University of New South Wales, Australia

▶ Neurotechnology

- Christian Penalzoa, PhD., CEO, Mirai Innovation Research Institute

▶ Cybersecurity

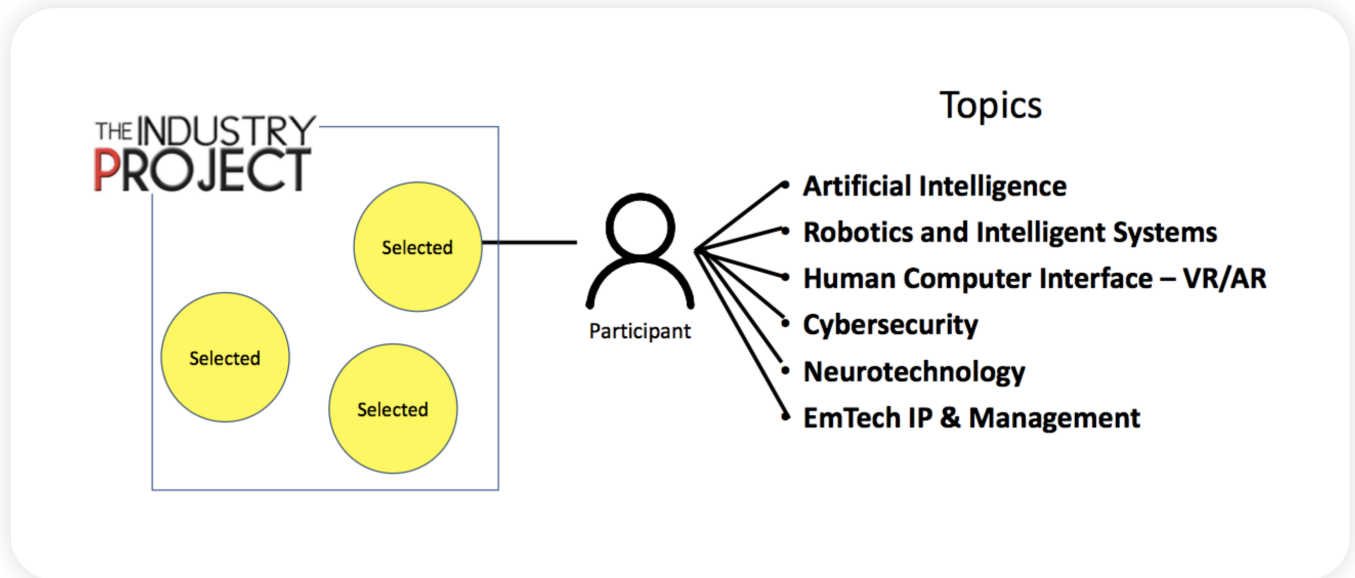
- Atsuko Miyaji, PhD., Professor, Osaka University
- Carlos Ivan Vargas, PhD., Director, Munitecnia

▶ EmTech Intellectual Property & Management

- Katsumori Iseki, M. S. Law, CEO of CP Japan.
- M.S Adrián G. Uvalle Reyes, Supply Chain and Project Management
- Manager, TOYOTA Motor Manufacturing Guanajuato
- Ms. Lizeth Fuentes Cervantes, Business Intelligence Specialist, Mirai Innovation Research Institute

Project Plan

Participants will be assigned an industry project provided by associate Japanese companies or universities, in which they will analyze a particular challenge, design and propose an innovative solution using emergent technologies, and develop the technical solution in collaboration with peer participants guided by an assigned mentor.



Projects in the following industries:

- ▶ Retail
- ▶ Healthcare
- ▶ Manufacturing
- ▶ Marketing
- ▶ Logistics
- ▶ Robotics
- ▶ Telecommunications
- ▶ Financial Analysis
- ▶ Architecture

At the end of the course, participants will present their solutions to peer participants, mentors, and company representatives. Successful course graduates will receive a completion certificate, and a special recommendation to associate recruitment agencies, who can open the opportunity for graduates to find jobs in Japan.

Projects Developed at EmFuTech

Below are some examples of the multidisciplinary projects developed during the EmFuTech Program.

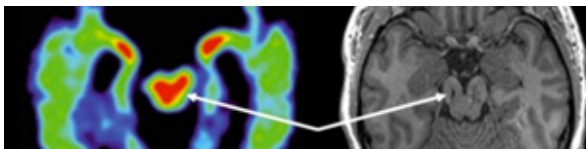
Artificial Intelligence and Computer Vision



Build AI-based product demand forecasting models to predict the next trend of items for online sale.



Develop a body movement analysis system to detect symptoms of brain stroke.



Develop a system that loads fMRI images, analyzes them using computer vision and detects anomalies using Deep Learning.



Develop a system to analyze human cells and detect nucleus anomalies.

Robotics



Develop the vision and control algorithms that allow the robot to detect persons and obstacles, and navigate within the warehouse.

Virtual and Augmented Reality

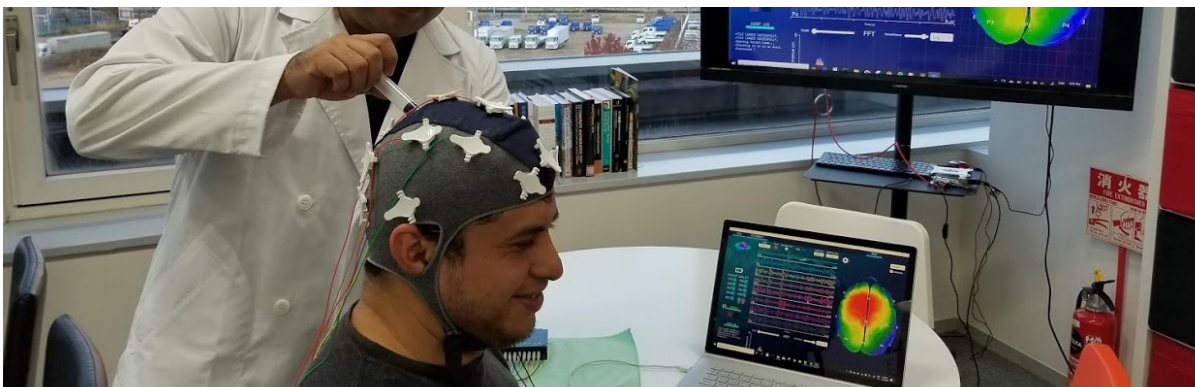


Develop Augmented Reality Advertising system for Smart windshields.

Neurotechnology



Develop a system to analyze biometric data (emotions) while the user observes commercial videos.



Calendar

EmFuTech program takes place twice a year from March-May and September to November.

January

S	M	T	W	T	F	S
29	30	31	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	1
2	3	4	5	6	7	8

February

S	M	T	W	T	F	S
26	27	28	29	30	31	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
1	2	3	4	5	6	7

March

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	31	1	2	3	4
5	6	7	8	9	10	11

April

S	M	T	W	T	F	S
29	30	31	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	1	2
3	4	5	6	7	8	9

May

S	M	T	W	T	F	S
26	27	28	29	30	1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31	1	2	3	4	5	6

June

S	M	T	W	T	F	S
31	1	2	3	4	5	6
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	1	2	3	4
5	6	7	8	9	10	11

July

S	M	T	W	T	F	S
28	29	30	1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	1
2	3	4	5	6	7	8

August

S	M	T	W	T	F	S
26	27	28	29	30	31	1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31	1	2	3	4	5

September

S	M	T	W	T	F	S
30	31	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	1	2	3

October

S	M	T	W	T	F	S
27	28	29	30	1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

November

S	M	T	W	T	F	S
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30	1	2	3	4	5

December

S	M	T	W	T	F	S
29	30	1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31	1	2



Key Benefits of EmFuTech program

- ▶ Training and mentoring by experts
- ▶ Experience implementing real systems for the industry
- ▶ Experience living in Japan
- ▶ Potential for employment in Japan
- ▶ Certificate of Completion*
- ▶ Recommendation letters*

*Upon successful completion of the program/project.

Who can apply?

Candidates with a strong interest in technology and with huge motivation to enhance their knowledge in several topics related to emergent technologies are welcome to apply. Due to the fact that the program will challenge participants abilities, there are some requirements that will allow participants to overcome the challenges that they will encounter during the course.

- ▶ Age above 20 years old.
- ▶ Citizenship from a country that Japan has diplomatic relationships.
- ▶ Conversational English level equivalent to TOEFL 550pts (Although no certificate is necessary, English competency will be evaluated during the interview).
- ▶ Recommended experience in any of the following programming languages such as C, C++, C#, Java, Python, or Web programming.
- ▶ Recommended experience working in other technology projects (hackathons,
- ▶ Have your own personal computer.



Steps to Apply



Program Fee

Registration Fee: \$500 USD (non-refundable)

Tuition:

- ▶ \$1,500 USD Monthly
- ▶ \$5,000 USD Total
- ▶ Plus Taxes (10%)

>>>> The above fees and tuition should be paid in advance before arriving to Japan. The registration fee and/or tuition may be waived or discounted for partner university students. Please check with the counsellor of the international office of your university to see if your university is a partner of Mirai Innovation Research Institute. <<<<

Extra Services

Accommodation service through Mirai Innovation includes the following:

- ▶ Search of accommodation
- ▶ Translation of the contract
- ▶ Reception at the airport
- ▶ Transportation by train to accommodation
- ▶ Japanese-Spanish interpretation during the signing of the contract and explanation of the use of the facilities.

>>>> The cost of this service is \$ 250 US dollars + Taxes (10%) <<<<

WATCH TESTIMONIALS

The testimony of students with CITNOVA Hidalgo Scholarship (Spanish).



LOCATION

Mirai Innovation Research Institute's laboratory is located in the Asian Pacific Trade Center (ATC)

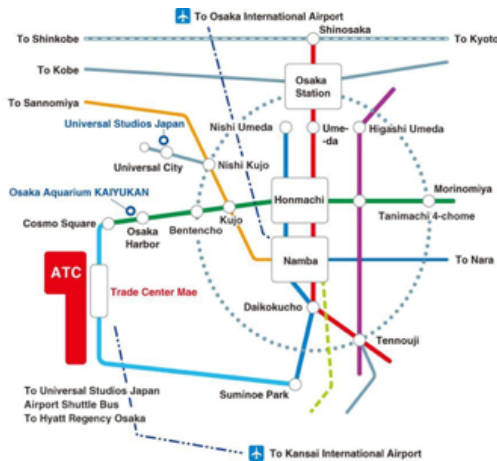
Suminoe-ku, Nankoukita 2-1-10 ATC bldg. ITM sec. 6th floor
 Rm. M-1-3, 2-chōme1 Nankōkita, Suminoe-ku, Ōsaka-shi, Ōsaka-fu 559-0034



Asia-Pacific Trade Center



The ATC Asian-Pacific Trade Center is the venue where G20 leaders met in June 2019 to address major global economic challenges. In addition, Osaka is Japan's second-largest metropolitan area after Tokyo. Osaka is the 3rd biggest city in Japan and is a wellknown destination for Japan gastronomy.



The three closest train stations are:

1. Trade Center Mae Station → 350m - 5 mins walking
2. Nakafuto Station → 800m - 11 mins walking
3. Port Town-nishi Station → 1.5 km - 20 mins walking

Points of reference

- ATC Asian-Pacific Trade Center → 53m - 1 min walking
- WTC Cosmo Tower → 750m - 11 mins walking
- Hyatt Regency Osaka → 900m - 13 mins walking

To get to Asia and Pacific Trade Center (ATC) Osaka Japan

Estimate Cost of Expenditure in Osaka

	Monthly Fee (~USD)
Rent	~ \$550USD
Food	~ \$600USD
Transportation	~ \$250USD
Home and Personal Hygiene	~ \$26USD
Insurance	~ \$61USD
Internet Service	~ \$40USD

Previous Experiences



Welcome Reception **Sep 2019**



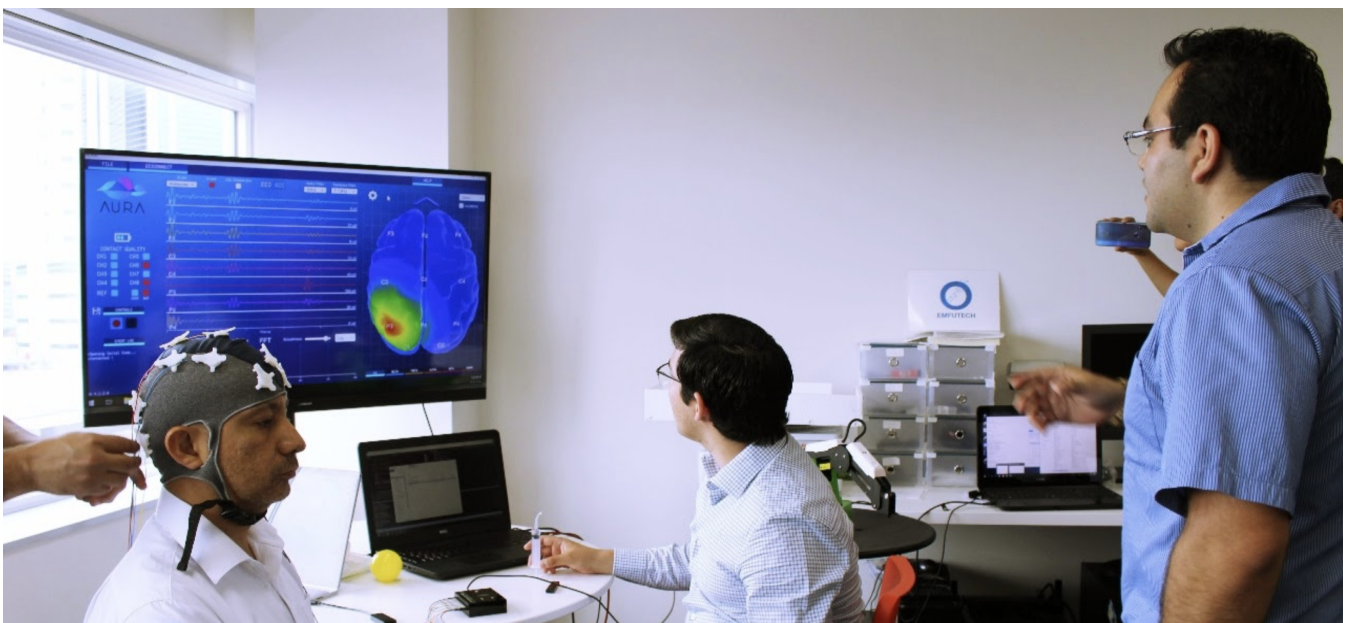
Visit to Osaka University **Sep 2019**



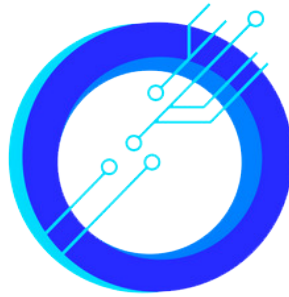
Visit of Mexican Ambassador Melba Púa to the Mirai Innovation Laboratory **Sep 2019**



Students working on the development of their projects **Oct 2019**



Demonstration of robotic arm activation using brain signals **Sep 2019**



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ONLINE APPLICATION

www.mirai-innovation-lab.com/emfutech

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