

# Research and Development for Energy Management System using AI chip

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Aizu Computer Science Laboratories, Inc.



## Company Overview

Company Name	Aizu Computer Science Laboratories, Inc.
Date of Establishment	Apr. 1, 2019
Head Office	1-77 Higashi-Sakaemachi, Aizuwakamatsu 965-0872, Japan
TEL / FAX	+81-242-93-8380 / +81-242-93-8381
Common Stock	20,000,000 JPY (As of Dec. 2019)
Major Business Area	R&D in computer science field (AI, Blockchain)
Representative	Masayuki Hisada, Dr. Sc.
Shareholder	Masayuki Hisada (86%)



## Director & CEO : M. Hisada, Dr. Sc.

Our company was established in Apr. 2019, specialized for **research and development** in advanced **computer science** fields.

Our company has strong **relationship with the University of Aizu**.

The university was established in 1993, as the **first university in Japan solely dedicated to computer science and engineering**.

We are looking for **Partner** for our research and development  
**Investors** interested in tech company specialized **AI** and **Blockchain** technologies  
**Energy related service provider** interested in using **AI** and **Blockchain** technologies

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3

## Major Research Area

AI

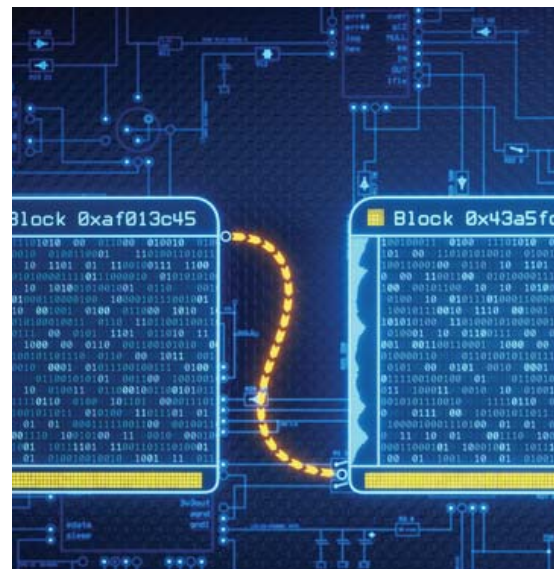
x

Blockchain



**Researchers**  
**AI x 4**  
**Blockchain x 2**

Researchers are mainly invited from graduate school of the university of Aizu



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4

# Edge Computing: IoT and AI



## Shifting from Cloud to Edge

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5

## AI Chip

Global Activities



5G AI chip



Inferentia  
Low latency, cost effective



FPGA  
AI Chip



Edge TPU  
Inference on Edge



A13 Bionic  
Neural Engine



GPU Processing  
GPU Board



Autonomous Driving



Custom Chip for ML



Arm AI/ML

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6



# AI CHIP

## Collaboration with UoA

Prof. Abderazek Ben Abdallah, Ph.D.  
Adaptive Systems Laboratory  
The University of Aizu



**1 High Performance**  
Prediction on Edge

**2 Low Power Consumption**  
Hardware spends less energy

**3 Multiple Neural Network (M-NN)**  
Combination of Neural Network with Network on Chip technology

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7

# Main Point of View

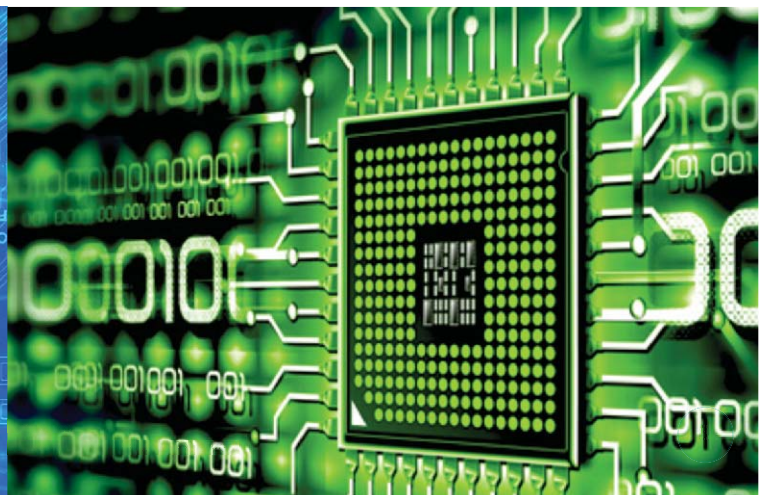
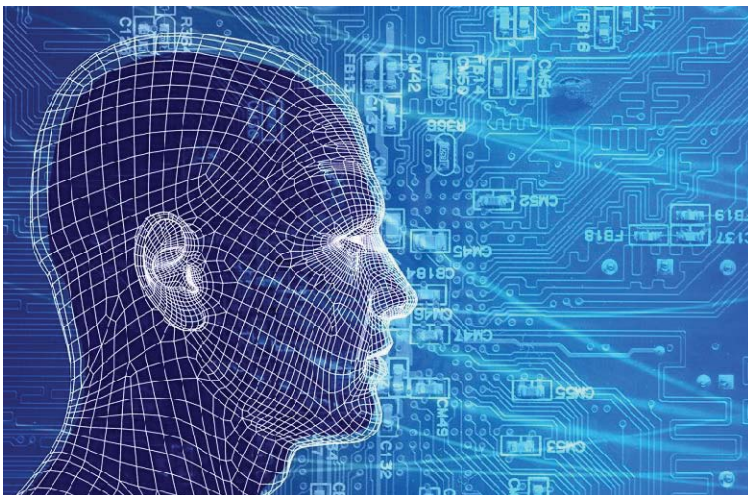
AIC x NoC

**Complicated Problem**

Flexible combination of multiple Neural Network

**Low Power Consumption**

Optimized custom chip consume very low energy



# AlaaS (AI as a Service)

This system **does not require any knowledge** of statistics or machine learning.

You just simply upload dataset, you can use its training result on your **edge computers**.



## Prediction by Neural Network (NN) on Software Platform

We will provide client framework written in Python language, you can easily access training results, re-use it for prediction purposes in any operating system supporting Python language.



### Software NN



### NN Chip

We provide FPGA (or ASIC) implementation for prediction purpose. You can easily use training results on edge devices. The environment is high-speed and low-power usage, and suitable for IoT and embedded systems.

## Prediction by Neural Network (NN) on Hardware Platform

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# Our R&D Activities (in Fukushima)

AI chip and its use case in EMS: Energy Management System

This project is partially supported by the funding from Fukushima prefecture

## EV x EMS

We have two business fields:

- Share-Car business
- EMS by EV

This project is collaborate with REXEV (renewable energy x EV) corp.

Weather forecasting, energy demand, EV SoC etc. consider complicated combination of predictions and inferences by AI (Neural Network).

Our implementation is hybrid with software and hardware (AI chip).



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# to Advance Knowledge for Humanity



## Starting from Fukushima Prefecture!

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