

第2回会津大学AIセンターシンポジウム

Second Symposium on AI Center

Date and time : Saturday, December 8, 2018 From 9: 30 to 16: 30

Place : UBIC 3D-Theater, The University of Aizu

Entry fee : free

Lecturers : UoA Faculty Members 5 person



<Morning session> Chairperson: Jiro Iwase

【Opening】 9:30- 9:40 President Ryuichi Oka



【Lecture 1】 9:40-10:30

『Artificial Intelligence Chips: From Data Centers to Edge and IoT Computing』

Professor Ben Abdallah Abderazek



【Lecture 2】 10:40-11:30

『Technologies for realizing AI in the edge: a brief survey』

Associate Professor Yoichi Tomioka



【Lecture 3】 11:40-12:30

『Recent trends on industry-university collaboration and patent application in the field of AI technology』

Professor Shiro Ishibashi



【Lunch break】 12:30-13:30

<Afternoon session> Chairperson: Qiangfu Zhao

【Lecture 4】 13:30-14:20

『Application of Machine Learning to the Detection of Wild Animals』

Senior Associate Professor Hiroshi Saito



【Lecture 5】 14:30-15:20

『Computer systems for Machine Learning and High Performance Computing』

Senior Associate Professor Naohito Nakasato



【Panel discussion, Exchange of opinions】 15:30-16:30

『What we can do now, and what we shall do in near future ?』

Coordinator : President Ryuichi Oka

Panelists and tentative topics :

Prof. Shigeo Takahashi『AI from CG point of view』 Prof. Evgeny Pyshkin『AI in software engineering』

Prof. Yuichi Okuyama『AI implementation using FPGA』 Prof. Chunhua Su『AI for IoT security』

Prof. Yuichi Yaguchi『Automation of autonomous』 Prof. Xiang Li『Making AI smarter』

* Presentation time : 40min、 Q&A : 10 min

* This symposium will be held in English. However, Lecture 3 will be in Japanese.

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Title: 『Artificial Intelligence Chips: From Data Centers to Edge and IoT Computing』

Abstract: In recent years, neuroscience research has revealed a great deal about the structure and operation of individual neurons, and medical tools have also revealed a great deal about how neural activity in the different regions of the brain follows a sensory stimulus. Moreover, the advances of software-based Artificial Intelligence (AI) have brought us to the edge of building low-power brain-like functioning chips and systems. Hardware implementations of such brain-like devices/chips, called AI-Chip, have the advantage of computational speedup over software implementation and can take full advantage of their inherent parallelism. Potential applications of AI-Chips include, autonomous vehicles, industrial robots, unmanned aerial vehicles, health care, agriculture robots, mobile devices, intelligent IoT, and natural language processing. This talk presents a deep survey of the state of the arts AI-Chips and their potential applications. The talk concludes by describing future prospects on AI-Chips and their impacts on future computing.

Title: 『Technologies for realizing AI in the edge: a brief survey』

Abstract: As the technologies of deep learning are developed, AI has gained impressive abilities for recognition and analysis. The amount of data acquired from sensors are increasing in the society, and it is strongly requested to make AI process such big data. Moreover, the demand of AI edge computing is increasing to realize low-latency and secure systems. Because AI requires a huge number of computations, how to reduce energy and accelerate inferences in the edge are important problems. In this talk, I will introduce state-of-the-arts technologies for AI edge computing and discuss the next challenges.

Title: 『Recent trends on industry-university collaboration and patent application in the field of AI technology』

『AI分野における産学連携と特許出願に関する最近の動向』

Abstract: In recent years, consultation from companies related to AI technology are increasing in the University of Aizu. We report the overview of collaborative research which has been carried out over the past few years, such as improving efficiency of production process, automatic detection of obstacles and hazardous events, and mechanization of know-how belonging to certain individuals. We will also describe recent trends in the field of AI technology from the perspective of patent application.

近年、会津大学においても AI 関連の企業からの相談や問合せが増えてきている。生産工程の効率化、障害物や危険事象の自動検出、属人的ノウハウの機械化など、ここ数年の間で行われてきた共同研究の概況について報告する。また特許出願の観点から見た AI 分野の最近の動向についても述べる。

Title: 『Application of Machine Learning to the Detection of Wild Animals』

Abstract: In this presentation, we present a wild animal detection system using machine learning. The system is based on a reasonable micro-computer board Raspberry Pi. Using sensors and camera, the system detects Japanese black bears called "Tsukinowaguma" in the captured images using convolutional neural network (CNN). We also address the battery life issue of the system and the research on the design of a low power CNN circuit.

Title: 『Computer systems for Machine Learning and High Performance Computing』

Abstract: Recently, GPUs are indispensable tools for effectively doing machine learning research. Accordingly, highly parallel computer systems used in HPC and GPU systems offered could providers are quite indistinguishable from each other. In this talk, I will review recent development of computer systems for those fields and present our current research direction at CAIST ARC-HPC.