久留米工業大学
KURUME INSTITUTE OF TECHNOLOGY

# AI Engineer Virtual Study Abroad Program

# AI エンジニア育成 バーチャル留学プログラム

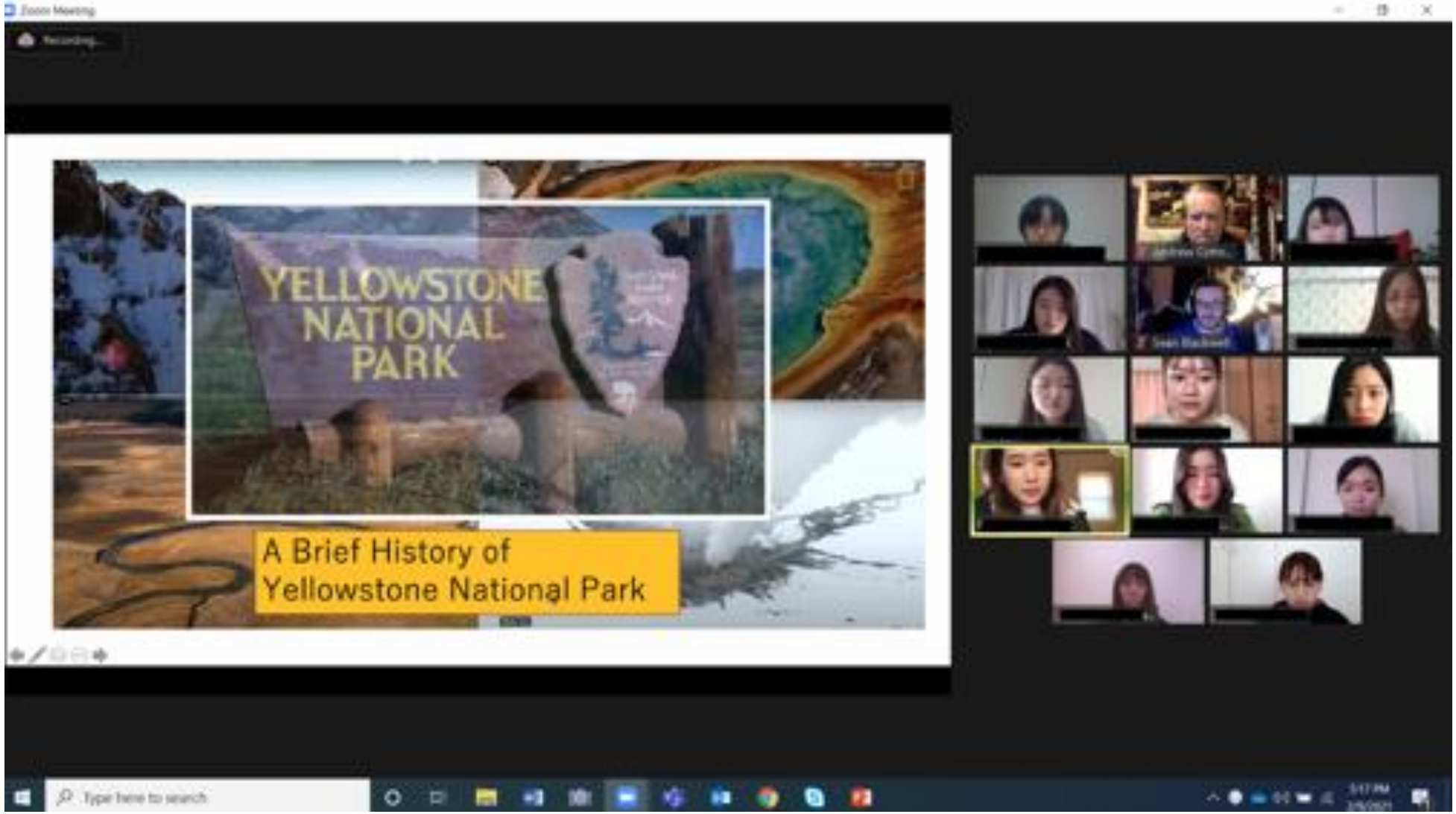
# AIエンジニア育成 バーチャル海外留学は…

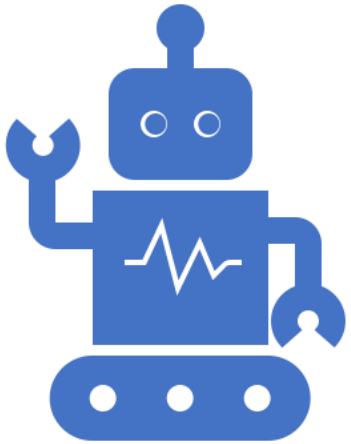
久留米工業大学
KURUME INSTITUTE OF TECHNOLOGY

「セントラルワシントン大学」
Central Washington University

共同で開発した国際社会で貢献できるAI技術者
育成のためのオリジナル語学研修プログラム

# Zoomを利用：バーチャル留学



# セッション1：8月2日から13日

# オーラルコミュニケーション１（午前9時から10:50）

※クラスは50分x2
合計：20時間

| Monday | Tuesday | Wednesday | Thursday | Friday |
|---|---|---|---|---|
| (8/02) Oral Comm 1<br>Day 1<br>9:00から9:50分<br>コースオリエンテーション<br>10:00から10:50分<br>通常クラス | (8/03) Oral Comm 1<br>Day 2<br>9:00から9:50分<br>通常クラス<br>10:00から10:50分<br>通常クラス | (8/04) Oral Comm 1<br>Day 3<br>9:00から9:50分<br>通常クラス<br>10:00から10:50分<br>通常クラス | (8/05) Oral Comm 1<br>Day 4<br>9:00から9:50分<br>通常クラス<br>10:00から10:50分<br>通常クラス | (8/06) Oral Comm 1<br>Day 5<br>9:00から9:50分<br>通常クラス<br>10:00から10:50分<br>通常クラス |
| (8/09) Oral Comm 1<br>Day 6<br>9:00から9:50分<br>通常クラス<br>10:00から10:50分<br>通常クラス | (8/10) Oral Comm 1<br>Day 7<br>9:00から9:50分<br>通常クラス<br>10:00から10:50分<br>通常クラス | (8/11) Oral Comm 1<br>Day 8<br>9:00から9:50分<br>通常クラス<br>10:00から10:50分<br>通常クラス | (8/12) Oral Comm 1<br>Day 9<br>9:00から9:50分<br>通常クラス<br>10:00から10:50分<br>通常クラス | (8/13) Oral Comm 1<br>Day 10<br>**9:00から9:50分**<br>**Job Interviews**<br><br>**10:00から10:50分**<br>**Job Interviews** |

英語による発表に必要なプレゼンテーション技術を身につけます。

***Self-introduction*** ***What do you do in your free time?*** ***What's your major?***

***What do you want to be in 10 years?*** ***What's your dream?***

***What did you put a lot of effort into when you were a student?***

# セッション２：8月16日から27日

# オーラルコミュニケーション 2（午前11時から12:50）

※クラスは50分x2
合計：20時間

| Monday | Tuesday | Wednesday | Thursday | Friday |
|---|---|---|---|---|
| (8/16) Oral Comm 2<br>Day 1<br>11:00から11:50分<br>コースオリエンテーション<br><br>12:00から12:50分<br>通常クラス | (8/17) Oral Comm 2<br>Day 2<br>11:00から11:50分<br>通常クラス<br><br>12:00から12:50分<br>通常クラス | (8/18) Oral Comm 2<br>Day 3<br>11:00から11:50分<br>**Kurume Kasuri**<br><br>12:00から12:50分<br>通常クラス | (8/19) Oral Comm 2<br>Day 4<br>11:00から11:50分<br>**Agriculture in Japan and U.S.**<br><br>12:00から12:50分<br>通常クラス | (8/20) Oral Comm 2<br>Day 5<br>11:00から11:50分<br>**Special Needs Education**<br><br>12:00から12:50分<br>通常クラス |
| (8/23) Oral Comm 2<br>Day 6<br>11:00から11:50分<br>通常クラス<br><br>12:00から12:50分<br>通常クラス | (8/24) Oral Comm 2<br>Day 7<br>11:00から11:50分<br>通常クラス<br><br>12:00から12:50分<br>通常クラス | (8/25) Oral Comm 2<br>Day 8<br>11:00から11:50分<br>通常クラス<br><br>12:00から12:50分<br>通常クラス | (8/26) Oral Comm 2<br>Day 9<br>11:00から11:50分<br>通常クラス<br><br>12:00から12:50分<br>通常クラス | (8/27) Oral Comm 2<br>**Day 10**<br>**Presentation Day**<br>**1） Kurume Kasuri**<br>**2） Cucumber Plant**<br>**3） Special Needs Education**<br>**Joined by Ediz (Dean of Extended and Global Learning) and other staff.** |

専門分野について英語で話すためのトレーニング
最終日プレゼン課題：AI活用演習（選抜クラス）で研究したプ課題解決PBLについて英語で紹介、成果発表

プレゼンテーションテーマ①

# Problem solving in special needs education

As face-to-face educational activities are limited by Coronavirus (COVID-19) , e-learning, which uses information and communication technology (ICT), is becoming increasingly wide-spread. In the case of e-learning for children with intellectual disabilities, it is very difficult for them to learn independently because they need not only support for learning contents and how to use ICT but also need emotional support with continuous and interactive communication. Therefore, we, the group of problem-solving in special needs education, will analyze the learner's emotional state, the level of understanding and concentration using facial expression recognition, voice recognition, and skeletal detection (hand, body, and head movements, and posture changes) by AI (Artificial Intelligence) technologies. We will then develop an e-learning system with a function that allows AI mentors to provide real-time mentoring (advice and support) attuned to individual learner’s emotion.

In recent years, the application of AI to estimate human emotions from the changes of facial expression has been paid much attention, and it is increasingly used in a variety of situations, for example, observing patients in the medical fields or analyzing customers' reactions to products in stores. However, there are still few applications which utilize facial expression recognition in the field of education.

プレゼンテーションテーマ②

# Problem Solving in Kurume Kasuri, a Traditional Craft

Kurume Kasuri is a traditional cotton fabric from the Chikugo region. By dyeing the cotton yarns first and then weaving them, slight shifts in the pattern occur. Such pattern shifts create a unique "texture" of the fabric, which is one of the main characteristics of Kurume Kasuri. It is also the appealing point of Kurume Kasuri.

There is a problem about the degree in the pattern shift. A moderate amount of pattern shifting brings out a good texture, but if the shifting is too large, the product will not sell, and the fabric has to be sold at a lower price. The problem is that the judgements of the degree of shifting by weavers and dealers are not always the same. Therefore, a system which can show the acceptable degree of shifting of patterns will help both weavers and dealers for their judgements. The Kurume Kasuri Study Group team will use image recognition technology to evaluate the texture (quality) of Kurume Kasuri and build a system to classify whether or not the texture is acceptable as a high-quality (whether or not the pattern shift (or misalignment) is within an acceptable range). By using AI technology, the team will challenge to make the advanced skills (tacit knowledge) of Kurume Kasuri craftsmen explicit on a computer screen.

プレゼンテーションテーマ③

# Problem Solving of Cucumber Farmers

The agriculture industry, which grows foods such as grains and vegetables that are essential for our survival, has long been an industry that requires long experiences of farmers to nurture the blessings of nature. With advanced technology, they can obtain variety of information such as upcoming weather, temperature, and extreme climate in the local area in advance so that they can prepare to minimize the damage by heavy rain or draught, heat or cold waves, or strong winds or typhoons. In the field of "smart agriculture," agriculture of the next-generation, utilizes ICT, AI, robots, etc., is paid much attention today.

The problem solving of cucumber farmers group aims to develop a system to diagnose symptoms of cucumber diseases and pests for new cucumber farmers and other people who grow the crops (cucumbers) as a hobby. The system uses AI image recognition technology to categorizes cucumber leaves into diseased or non-diseased types, and diagnoses the diseased leaves and detects their diseases. By analyzing the big data on the cucumber growth conditions, cucumber diseases and past weather data, we hope to support new farmers and help them harvest large amount of good cucumbers.