Microsoft

AI GAMING

MICROSOFT
STUDENT PARTNERS EVENT

FOR MICROSOFT STUDENT PARTNERS RUNNING THE MATCH GAME AZURE
COGNITIVE SERVICES EVENT

V: 0.2.6

CONTENT

WELCOME

MICROSOFT STUDENT PARTNERS EVENT

Thank you for hosting a Microsoft Student Partners Event on the AI Gaming platform.

This document should help you to prepare for the event and to be able to address questions while the event is underway.

PAUL MCDONNELL
CEO AI Gaming

01

AN OVERVIEW OF THE EVENT

As a Microsoft Student Partner, you have the opportunity to organise and run events that will introduce your fellow students or colleagues to Microsoft's AI and Machine Learning Cognitive Services.

AI Gaming and the Microsoft Student Partners team have put together all of the resources you will need to be able to host a live event even if you have never hosted an event before..

WHAT IS A MICROSOFT STUDENT PARTNERS MATCH GAME EVENT?

These MSP events use the aigaming.com platform where users write code to play games and challenges. AI Gaming have developed a game specially for these events. It specifically requires the user make use of the Azure Cognitive Services in order to be able to play it.

This provides an interesting and fun way for people to be introduced to Microsoft's AI and Machine Learning services and it also provides a packaged solution that MSPs can follow to run Microsoft events at their institutions.

Event participants write code in Python to take part in live games, played against other people at the event.

The event culminates in a tournament that plays each user's code against each other to determine the best players.

MICROSOFT STUDENT PARTNERS

- Student Technology Leaders
- Leadership Experience
- Resumé Building
- On Campus Tech Gurus
- Sharing Knowledge
- Passion for Technology

YOU CAN RUN A MICROSOFT EVENT

02

PREPARING FOR THE EVENT

EVENT STATISTICS

🕑 **EVENT DURATION:**
4 HOURS

. . . .

👤 **AVERAGE ATTENDEES**
60

. . . .

👥 **AVERAGE PEOPLE WHO SIGN UP**
110

. . . .

% **CONVERSION RATE:**
55%

The goal of this pre-packaged event is that people with very little experience of hosting events, and with only a little background of Microsoft's Cognitive Services, will be able to use the AIGaming.com gaming platform to run an event.

With a little preparation, and some help from friends or colleagues, you should be able to complete everything necessary to event attendees working with Microsoft's cognitive services and competing with each other as they develop code to solve our Match Game challenge..

02-01

EVENT BENEFITS
. . . .

👤 **USE THE AIGAMING.COM PLATFORM TO CONTROL THE EVENT**

AIGaming.com have developed an entire platform that will control the event for you, from signing up event attendees, to an online code editor with code examples.

📄 **WHAT ARE MY MAIN ACTIVITIES FOR THE EVENT**

You need to book a room and get people to sign up for and attend the event. You'll need to spend some time to become familiar with the AI Gaming event system and how games are played.

📅 **WHAT CAN I EXPECT DURING THE EVENT?**

Events usually last for 4 hours with an average of 50 people attending. You'll make an introduction to show attendees what to do (we have videos to show you hpw to do this), then you'll use the aigmaing system to run a couple of tournaments during the event.

🛟 **WHAT SUPPORT WILL I GET WHEN ORGANISING THE EVENT?**

Microsoft will support you by funding food, where possible, for the event. During the event preparation, there is help from the msp team via email and help from AI Gaming via Skype chats and emails. You'' be supported with all of your questions to make the event happen.

TYPICAL EVENT SCHEDULE

5:30

EVENT REGISTRATION

Attendees arrive and are helped to sign up for a Microsoft Azure trial account and to register for the event on the AI Gaming platform.

6:00

WELCOME AND INTRODUCTION VIDEO

Welcome people to the event and tell them about any event specific details like health & safety announcements and then play the introduction videos.

6:20

START CODING

Technical assistants should mingle with attendees to answer questions, help with simple code questions and make sure everyone makes progress.

7:15

FOOD & DRINK BREAK

Announce the food and drink. Serve the food at least an hour after the event starts so people don't turn up, eat and leave, but well before the first tournament begins.

8:00

FIRST (TRIAL) TOURNAMENT

Run the first tournament and display it on the projectors. Provide commentary if you can and in the final rounds ask which teams own the botnames still playing.

9:40

FINAL TOURNAMENT AND PRIZE GIVING

Run the final tournament with the same commentary and audience participation. At the end, announce the winners and have they come up to receive their prize. Make any final announcements you like and remember to thank Microsoft for sponsoring.

INTRODUCE PEOPLE TO THE POWER OF AZURE COGNITIVE SERVICES

REQUIREMENTS
CHECKLIST

The following checklist is a high level summary of everything you will need to organise and do for the event.

01 **A TEAM OF PEOPLE TO HELP ORGANISE AND RUN THE EVENT**

▪ You don't have to and shouldn't try to do the event on your own. Look for interested people, technical or not, to help.

02 **ARRANGE A SUITABLE VENUE, PRIZES, FOOD AND DRINK**

▪ Microsoft provide sponsorship funds so you can organise a venue with food and drink plus prizes for winners

03 **ADVERTISE THE EVENT AND SIGN UP ATTENDEES**

▪ Get the word out on notice boards, with clubs and societies and on social media.

04 **FAMILIARISE YOUR TEAM WITH THE MATCH GAME CHALLENGE**

▪ Review the help documentation and videos to learn how to develop your own Match Game solution

05 **REVIEW HOW TO CREATE AND RUN TOURNAMENTS ON THE AI GAMING PLATFORM**

▪ As Event Manager you will have special privileges that allows you to create and run tournaments

06 **KEEP ATTENDEES UP TO DATE PRIOR TO THE EVENT**

▪ Make sure you keep people up to date with any event details or changes.

07 **HOST THE EVENT**

▪ Be the main point of contact during the event and strive to make it as much fun as possible for everyone involved.

QUICKSTART
YOUR ONE PAGE SUMMARY TO UNDERSTAND THE MICROSOFT MATCH GAME

To get a first introduction to the Microsoft Match Game, that will be played at the event, you can follow the Microsoft Match Game Event instructions on the AI Gaming site.

The instructions include videos that show you exactly how the system works and where you will find the options and settings that you need to understand.

You can find these instructions under the Help pages at aigaming.com. Look for the Microsoft Match Game Event page or go to the page at:

https://www.aigaming.com/help?url=more-information/msp-event

Reviewing all of the instruction on this page will give you a great overview of what will be required during the event. After working through this page you will understand some of the key points of the event including:

▪ Exactly what the Microsoft Match Game is

▪ How and where to write code on the aigaming.com platform

▪ What the template code is and how it starts you off with a working solution

▪ How to get a Microsoft Computer Vision API key and why you need one.

▪ How to extend the template code to solve the next steps in the Microsoft Match Game

▪ The best approach to improving the template code to implement the best game play strategy.

02-02

DECIDE ON A DATE
....

Events can run whenever you think your potential audience is most likely to be able to attend. You may be able to get a large audience to participate Monday to Friday or you can plan an evening or weekend event if this is most convenient for your event participants.

You can then review the dates that are available for events. The aigaming.com system lets MSPs choose available dates from its Event Management option. Read more about this when you are ready under "Scheduling your event on the aigaming site" on page 20.

02-03

RECEIVE AN EVENT REGISTRATION CODE
....

In order for attendees to participate, they must register for the event. Event registration means that your event is private and only the people that have been given your event's unique registration code will be able to take part in your tournaments. This prevents any user of the AI Gaming site being able to register for tournaments that you create.

An event registration code is in the format NNN-NNN-NNN, for example:

123-456-789

When you create your event, you will receive this event registration code as part of a sign-up URL that you can give to event attendees so that they can register their interest in the event.

The Event URL will look like the following example:

https://www.aigaming.com/event?code=123-456-789

02-04

ARRANGE A VENUE
....

Lecture theatres and Conference rooms make great venues for these events.

A suitable venue should have a means of projecting a laptop screen onto a display that all attendees will be able to gather around and see at the start of the event, when introductions are made, and for the end of the event when the main tournament is played and the prizes are awarded.

The venue should also allow attendees to sit and work at laptops in comfort. Attendees will spend the majority of the evening writing code either individually or in teams. Many events use venues that allow attendees to sit and view presentations in one area but then spread out into larger seating areas to find space to write code for the rest of the evening.

▾ **CAPACITY**

The venue should have enough space for the anticipated number of attendees, plus some contingency in the case that more attendees arrive than you anticipated.

▾ **CATERING**

Consider whether the venue can provide food and drinks and at what cost, or what is their policy on food and drinks being brought in.

▾ **LAYOUT**

Open plan layouts always work the best where attendees have space to sit and work but can still see what is happening with everyone else at the event.

▾ **INTERNET**

What internet speed and capacity does the venue offer? Make sure WiFi access codes are prominently displayed so attendees can connect straight away.

Sign up for a Free Azure Trial at aka.ms/Azure4Students

02-05

ADVERTISING THE EVENT

When you have secured a date for your event on the AI Gaming system, you should start to advertise your event as soon as possible.

Make sure you emphasise everything you have arranged for the event including food and drinks and the prizes that are on offer. Make a point that the event can be enjoyed by beginners and advanced programmers alike.

Connect with all of the Science, Technical, Engineering and Maths groups and societies to get them to advertise the event to all of their members via email, social media and announcing it at any of their meetups.

Make a poster or flyer and distribute it around the campus for everyone to see.

02-06

ATTENDEE SIGN-UP

It's important to be aware of how much interest your event is receiving once you start to advertise it as your venue will have a limit on the number of people it can hold.

The AI Gaming Event Management system will let you set the maximum number of event registrations you want to allow. It will let you review the number of people that have signed up with information about who they are.

Make sure that you limit registrations to a level that you are comfortable with in respect of the venue, but bear in mind that, in our experience, only approximately 55% of registrants will actually turn up on the night. This percentage will vary considerably due to factors like local culture, weather, and other concurrent events, so you should have a contingency plan in place should 100% of registrants turn up.

02-07

ARRANGING FOOD & SWAG

The Microsoft MSP Help team may be able to sponsor food for your event. Availability varies between regions so you must receive confirmation of what your event is eligibale for before making any commitments.

All arrangements for food or sponsorship at the event are made via:

msphelp@microsoft.com

When you have your venue arranged and you have a date reserved on the aigaming.com system, one of the next priorities is to contact msphelp@microsoft.com to establish what they can provide. This process is a high priority as it will take at least 20 days to process, so, submitting 30 days before the event should be your goal.

> *"The request must be submitted and reviewed at least 20 days in advance"*
>
> The MSP Help Team

Food

MSPs are able to leverage the Subway Catering Program to order up to 100 meals for their events. Subway is available in most countries, but not all countries, so, again, you should liaise with MSP Help to make sure what is available to you.

The advantage of the Subway Catering Program is that there are no out of pocket expense to MSPs. Microsoft will pay Subway directly.

NOTE:

In all circumstances, make sure you have an agreement in place with MSP Help before incurring any personal expenses.

02-08

TRIAL TOURNAMENT

Events usually have two tournaments (but you could run as many or as few as you like). The first is usually ran half way through the event. This is a light-hearted trial tournament while people are still in the middle of developing their code. Its purpose is to inject some fun and excitement half way through the event, but also to make sure people are familiar with how to register for a tournament so that they do not have any problems registering for the main tournament.

The main tournament is the final tournament of the event and is the one that we use to award the winners for the evening.

TRIAL TOURNAMENT INCENTIVE - If you have any small swag or prizes, it's good to offer them as prizes for the winners of the trial tournament as an incentive to make sure people sign up and become familiar with the process for later in the event.

Some people are reluctant to sign up at this stage as they feel their code is not yet good enough, but, we always say that luck can play a big part and that even the template code we start people off with has been known to win in these first tournaments.

02-09

📑 LEARNING RESOURCES
BREAKDOWN

There is a set of online resources to help you prepare for the event and to help make the event run smoothly.

01 **VIDEO - EVENT INTRODUCTION**
- You don't have to worry about standing up and presenting at the event if you don't want to.

02 **VIDEO - INTRODUCTION TO THE ONLINE CODE EDITOR**
- Introduces event attendees to the AI Gaming Editor and how to run games

03 **VIDEO - HOW TO ENTER TOURNAMENTS**
- Makes sure people understand how to submit their code to play in a tournament if they want to compete.

04 **VIDEO - IMPLEMENTING LANDMARK MATCHING**
- Explains how matching is done and how to extend it to match another category of images, landmarks

05 **VIDEO - IMPLEMENTING OPTICAL CHARACTER RECOGNITION**
- Explains how text recognition is done and how to add an OCR API call to the template code to match Words.

06 **VIDEO - INTRODUCTION TO JSON AND PYTHON DICTIONARIES**
- An introduction an explanation of what the Microsoft Cognitive API returns when it analyses images

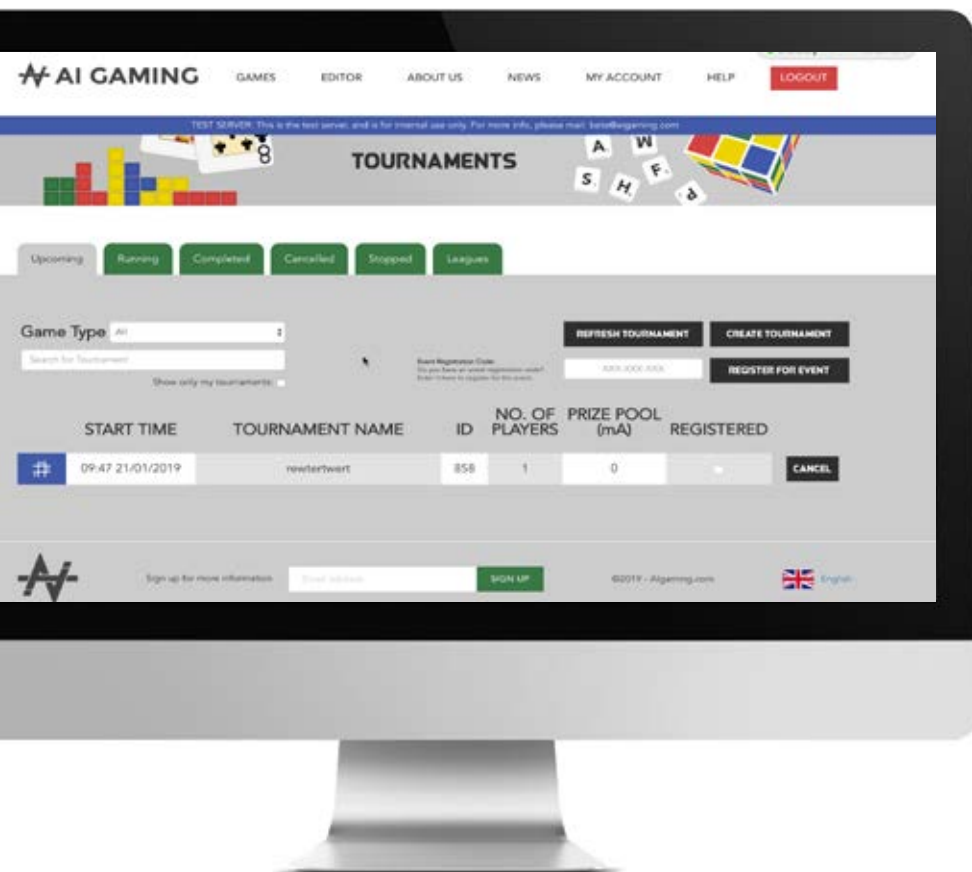**07** **VIDEO - VIEWING THE COGNITIVE SERVICES API RESPONSES**
- An introduction an explanation of what the Azure Cognitive Services APIs return when they analyses images

08 **HELP PAGES - MATCH GAME PROGRAMMER'S REFERENCE**
- Details about how to play the Match Game on the AI Gaming platform

03

SYSTEMS **KNOWLEDGE**

FAMILIARISE YOURSELF WITH:

Azure Cognitive Services

aigaming.com platform

In order to help people out during the event, you and the technical assistants at the event will need to be familiar with the two technical systems that the game is based on, the AI Gaming system and the Azure Cognitive Services Computer Vision API.

MICROSOFT COMPUTER VISION API

You don't need to know all about the Azure Cognitive services. We use the Computer Vision API and will give you an overview of:

- Registering for an Azure4Students trial account
- How to call the Computer Vision API

THE AI GAMING PLATFORM

You will need to be familiar with two areas of the AI Gaming platform

- How to write code and play games
- How to manage the event and run tournaments

03-01

OBTAINING A COMPUTER VISION API KEY

An important and essential part of the event is to have the attendees sign up for a free student trial account with Azure.

The challenge cannot be played without a valid API key for the Computer Vision API of the Azure Cognitive Services. Obtaining a key requires that each person attending the event creates an Azure account so that they can generate a key.

This is a relatively simple process but it's one that you should be very familiar with as problems obtaining a key can slow down the whole event,

delaying the start of people coding and impacting on their ability to enter tournaments.

Attendees must sign up for an **AZURE FOR STUDENTS ACCOUNT**. This provides $100 of free Azure credit without requiring a credit card at sign up. A mobile telephone number and an **academic email address** are required.

The link to the right should be used to start the student sign up process:

Further information about the Azure Free Trial for students can be found at the FAQ located at: https://azure.microsoft.com/en-us/free/free-account-students-faq

aka.ms/Azure4Students

Note that if attendees sign up for an account and select a region other than West Europe, they must change the following line of code in the template code that we provide in the online code editor to the appropriate region:

```
vision_base_url = "https://westeurope.api.cognitive.microsoft.com/vision/v2.0/"
```

BACKUP OPTION FOR OBTAINING A COMPUTER VISION API KEY

As a backup to using Azure for Students, attendees can also sign up for the 7 day free trial of Cognitive Services, but note that this limits calls to 20 per minute, so their code will run more slowly than their competitors. This option is not recommended and should not be used in any circumstances other than if a particular attendee cannot acquire a Computer Vision Key in any other way.

The link to sign up for the 7 day free trial is:

https://azure.microsoft.com/en-us/try/cognitive-services/

03-02

UNDERSTANDING THE COMPUTER VISION API

The cloud-based Azure Cognitive Services provides developers with access to advanced algorithms for processing images and returning information.
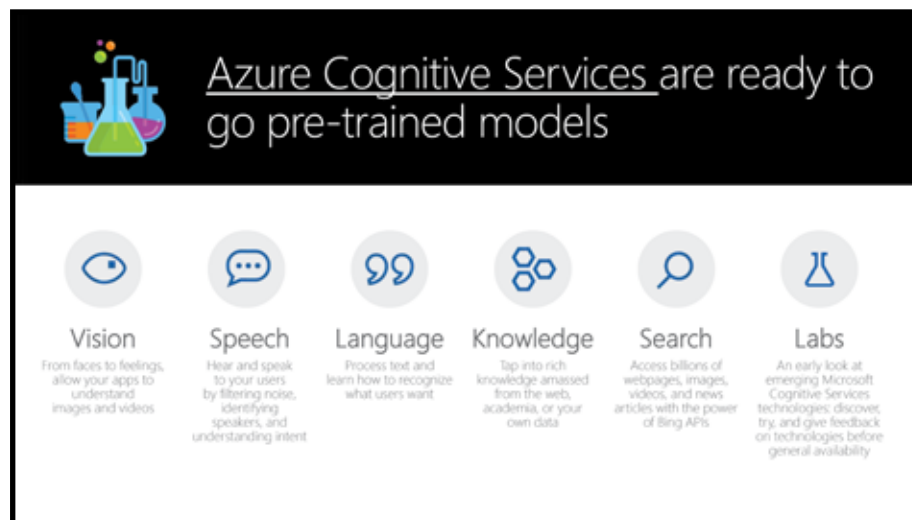
The Computer Vision API works with popular image formats, such as JPEG and PNG. To analyse an image, you can either upload an image or specify an image URL. Computer Vision algorithms can analyse the content of an image in different ways, depending on the visual features you're interested in. For example, Computer Vision can determine if an image contains adult or racy content, or, find all the faces in an image.

To play the Match Game, attendees will use the Computer Vision APIs to identify subjects in images and interpret images of text. Images in the game fall into three categories - animals, landmarks or text. For the first two categories, players will use the "Analyse" Computer Vision API call, and for the latter the Text Analytics API call.

The Computer Vision APIs take a URL of the image to be analysed and a number of parameters to determine how they operate, and return a package of results as a JSON object. There are help videos available on the MSP Events page at aigaming.com/help which explain how results are returned and how players can process JSON objects in Python code.

Further information on the Computer Vision API can be found here:

https://docs.microsoft.com/en-us/azure/cognitive-services/computer-vision/home

Azure Cognitive Services are ready to go pre-trained models

Vision	Speech	Language	Knowledge	Search	Labs
From faces to feelings, allow your apps to understand images and videos	Hear and speak to your users by filtering noise, identifying speakers, and understanding intent	Process text and learn how to recognize what users want	Tap into rich knowledge amassed from the web, academia, or your own data	Access billions of webpages, images, videos, and news articles with the power of Bing APIs	An early look at emerging Microsoft Cognitive Services technologies; discover, try, and give feedback on technologies before general availability

03-03

THE AI GAMING PLATFORM

The event runs on the AI Gaming platform at aigaming.com. You should familiarise yourself with the platform from a user's perspective and from an event manager's perspective.

As the Event Manager, you will be assigned special privileges on the aigaming.com site that will allow you to manage the event and to create and run tournaments.

03-04

FAMILIARISE YOUR TEAM WITH THE CHALLENGE

You (and the technical assistants on your team) should familiarise yourself with the Match Game challenge and preferably write a complete solution to the challenge yourself.

To achieve this and to further prepare for the event, watch through the video materials that we supply to assist event attendees. These are available on the AI Gaming help pages at aigaming.com/help. Additionally read through the game specific help pages for the Match Game on the same aigaming.com/help site.

There is a brief introduction to the Match Game later in this document under "Match game" on page 32.

03-05

SCHEDULING YOUR EVENT ON THE AIGAMING SITE

In order to run an event on the aigaming.com platform, you will need to reserve the date that you want to hold the event on. Event dates are controlled to prevent too many events running at the same time, so, make sure you check and reserve an event date.

VERIFYING YOUR MSP STATUS

In order to be able to create events on the aigaming.com site, you need to be verified as a Microsoft Student Partner. You can do this by signing up for an account on the aigaming.com site using your studentpartner.com email address.

If you sign up with your studentpartner.com email address, you will be sent a verification email. Following the link in this verification email will mark your account as both an MSP account and as an Event Manager. Event Managers are allowed to create and schedule tournaments and MSPs are allowed to

create and schedule MSP Match Game events.

You can verify that you have been allocated the roles of MSP and Event Manager at the bottom of your Account Management page

CHOOSING YOUR EVENT DATE

When you have signed up for an account and have verified your MSP and Event Manager status, you can create an event from the My Account -> Event Management menu option.

The resulting page will display a Create Event button. Clicking on it will bring up the New Event dialogue box that allows you to create an event.

COMPLETING THE NEW EVENT DIALOGUE BOX

Login to the account that has been set to be an MSP and Event Manager account at aigaming.com and choose the EVENT MANAGEMENT option from the MY ACCOUNT menu. Click on the Create Event button

- **Name** - Give a descriptive name like "Stafford University MiniHack"
- **Game Type** - This defaults to the Match Game as this is the only game type that MSPs can create events for. The option will be disabled and you cannot change this option.
- **Description** - Add a description of the event like "A collaboration between the CompSoc and Microsoft Student Partners at Stafford University".
- **Event Timezone** - Select the Timezone that this event will run in, for example Europe/London or America/LosAngeles or Asia/Singapore.
- **Event Start Date** - This is where you will select your preferred event date from a list of available dates. Available event dates are controlled to prevent too many events running on the same date. Your event can only run on one of the dates available from this list.
- **Event Start Time** - This is the local time that your event will start at.
- **Event End** - The date and time that the event will end. Events are usually 4 hours but your event may run overnight or may run several days.
- **Click the Submit button**

03-06

TOURNAMENTS AND HOW TO SET THEM UP
···..

During the event you will need to run tournaments where attendees get to pit their code against other people at the event. There are usually two tournaments during each event.

CREATING A TOURNAMENT - You create a tournament to run at a scheduled time during the event. Once the tournament is created you need to let the event attendees know that there is a tournament and encourage them to submit their code to the tournament.

Each event attendee must submit their own code to the tournament in order to be involved in it. This allows the user to opt-out of playing in the tournament if they do not want to compete, and it allows them to choose which code file they want to submit to play in the tournament. Users may have several code solutions in their account for each game.

We choose to run two tournaments at each event as we use the first tournament as a trial. This allows users to familiarise themselves with the process of entering code into a tournament. They also get to see the tournament played out and learn that they can still edit their code file after it has been submitted to the tournament.

Tournaments can be created at any time but it is best to wait until the event has begun and you know if any delays or issues may change the number of tournaments you can run during the event or when you schedule the tournaments to start. If there are issues after you have created a tournament, it can be cancelled by the Event Manager if necessary.

The Event Manager can create a tournament from the GAMES -> Tournaments page. The dialogue box below is used to create a tournament and each entry is explained under "Completing the new EVENT dialogue box" on page 21.

CANCELLING A TOURNAMENT
To cancel a tournament (or stop it if it has already started, choose the TOURNAMENTS option from the GAMES menu, select the appropriate tab and click the CANCEL button to the right of the tournament you wish to cancel. You may also create a tournament ahead of the event in order to practise using the system.

New Tournament

Name	tournament name
Assign to Event	event
Game Type	game type
Game Style	game style
Max Entries	0
Min Entries	4
Break between rounds, sec	0
Open Registration	08/01/2019 20:17
Start Tournament	08/01/2019 20:27

Submit Cancel

COMPLETING THE NEW TOURNAMENT DIALOGUE BOX

Login to the account that has been set to be an Event Manager at aigaming.com and choose the EVENT MANAGEMENT option from the MY ACCOUNT menu.

- **Click the CREATE TOURNAMENT button**

- **Fill in the fields in the New Tournament window:**

- **Name** - Give a descriptive name like "Microsoft UCL 9:40 Final Tournament"

- **Game Type** - Select "Match Game" as the type of game to be played at the event.

- **Game Style** - Select "7304 18 pairs". Styles allow the complexity of the game to be varied, but there should only be this one style for the Match Game.

- **Max. Entries and Min. Entries** can be left at their default values of 0 and 4.

- **"Break between rounds"** introduces an artificial delay after all games in one round have been completed and before the next round starts. This should be left at its default value of 0.

- **Open Registration** should be set to an appropriate time prior to the tournament start time, for example if you are using our suggested schedule, set to 19:30 for the 20:00 trial tournament and to 21:10 for the 21:40 final tournament.

- **Start Tournament** should be set to the tournament start time. For our suggested schedule 20:00 for the trial tournament and 21:40 for the final tournament.

- **Click the Submit button**

03-07

HOW USERS ENTER TOURNAMENTS

There is a video explaining how users enter tournaments on the MSP Event help page at aigaming.com/help.

Users enter a tournament by submitting a code file. The code in this file will be used to play against other players during the tournament.

You create a tournament to run at a scheduled time during the event. Once the tournament is created you need to let the event attendees know that there is a tournament and encourage them to submit their code to the tournament.

Each event attendee must submit their own code to the tournament in order to be involved in it. This allows users to opt-out of playing in the tournament if they do not want to compete, and it allows them to choose which code file they want to submit to play in the tournament. Users can have several code solutions in their account for each game.

We choose to run two tournaments at each event as we use the first tournament as a trial so that users can familiarise themselves with the process of entering code into a tournament. They also get to see the tournament played out and learn that they can still edit their code file after it has been submitted to the tournament.

When in the Online Code Editor (the EDITOR menu option at the top of the aigaming.com site), a user can quickly enter the code file that they are currently working on into an upcoming tournament using the dropdown menu attached to the RUN button.

To enter the code file into a tournament, the user should click the down arrow to the right of the RUN button, to reveal a list of upcoming tournaments with their start dates and times.

Clicking the name of the tournament will enter the current code file to the tournament. The user can check to see if the file is registered for a tournament by viewing the dropdown list again where they will see a green tick beside the tournament they have entered. Clicking the tournament name again will remove the entry from the tournament and in this way a user can leave the tournament or update their entry

to a different code file, for example if they developed and improved solution before the tournament start time.
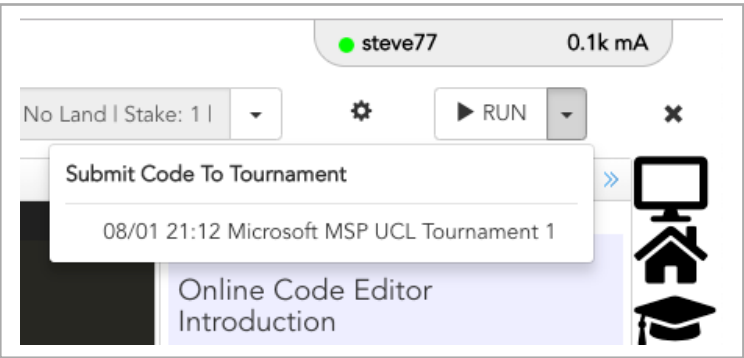
It is important to note that the tournament will read the latest saved version of the code file at the tournament start time regardless. This gives the user the ability to register for the tournament in plenty of time and to continue to edit their registered code, but, that code must be tried and tested in advance of the tournament starting.

Once the tournament starts, a copy of the code file is made at the tournament start time. This means that the code version at the time the tournament start time is used for all rounds of the tournament. Changes to the code file after the tournament has begun will not be used in any rounds of the tournament.

03-08

THE FORMAT OF A TOURNAMENT

Tournaments randomly pair and play registered users against each for the first round. The winners of each game progress to the next round.


The number of rounds in a tournament will automatically be adjusted to accommodate all the entries. For example, 45 entries will result in a tournament with 6 rounds, the first of which has 32 games played and the subsequent ones 16, 8, 4, 2 and 1 respectively. In the first round, 0 or more players may receive a "BYE" into the following round, which means they do not play a game and instead automatically reach round 2. The allocation of opponents and byes is random.

In our 45 entry tournament example, 26 players would receive a bye in the first round and would successfully progress from round 1 to round 2 without having to play a game.

Before a tournament starts, it will be listed in the "Upcoming" tab of the GAMES -> TOURNAMENTS page. Clicking the entry will display an alternative option to register for a tournament.

Once the tournament begins, the listing will move from the Upcoming tab to the Running tab, and clicking on it will display the bracket view of the tournament. This is a live view that will update as each game is
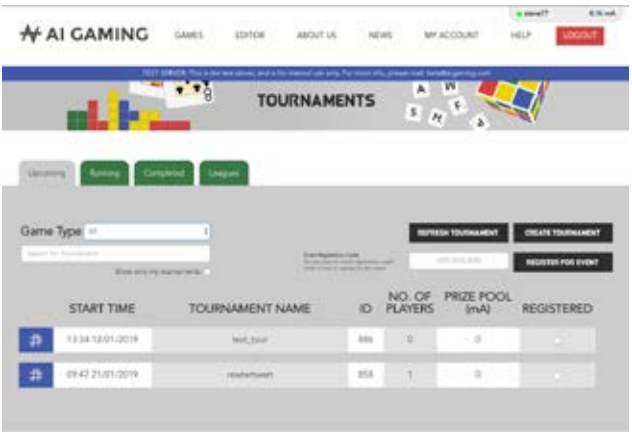
played and is an excellent view to display on the projected screen when the tournament is in progress.

In the bracket view, the current and future games are displayed and different icons reflect the current position of each game in the tournament.

Hourglass - The game is waiting to start (either the previous round is still being played, or the specified delay between rounds is underway).

Spinner - The game is in progress. Clicking on the game while it is in this state will bring up the game visualiser so that you can watch the game live as it plays.

W or L - this denotes the Winner and Loser of the game respectively.

Each round plays in turn through to the final round. If a game is a draw, then, the game is replayed as a draw would prevent the tournament from progressing. If every game between these two players results in a draw (an unlikely occurrence), a player is chosen at random to progress to the next round.

If a player's code has an error in it, such as a syntax error or runtime error, they automatically lose the game and an X icon is shown by their game to indicate this fact.
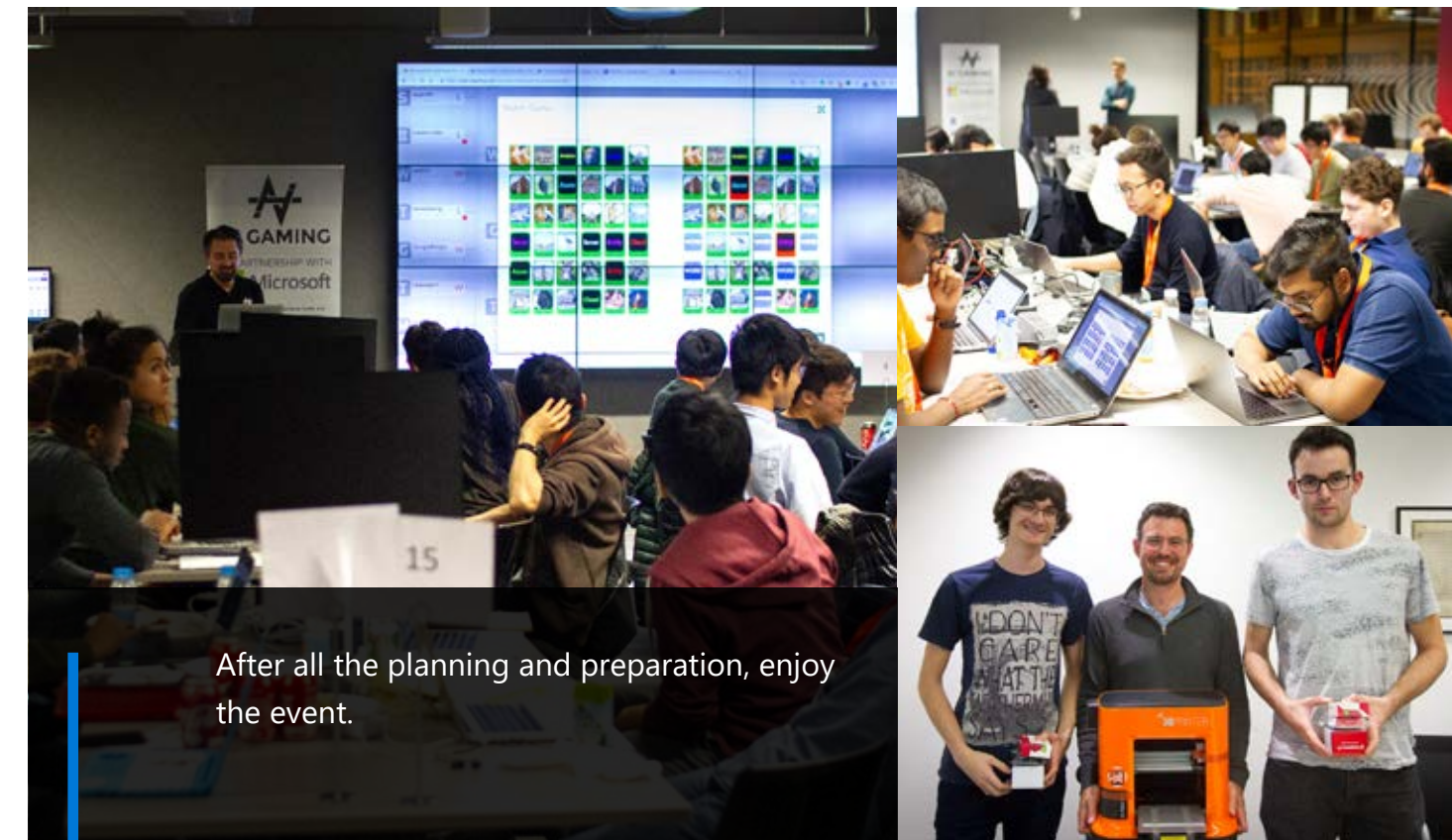
At the same time that the final game is being played to determine First and Second place, a further game is played between the two semi-finalists to determine the Third and Fourth place players.

PROJECT THE TOURNAMENT DISPLAY SO THAT EVERYONE CAN WATCH IT LIVE AND CHEER THEIR TEAM'S ENTRY ON
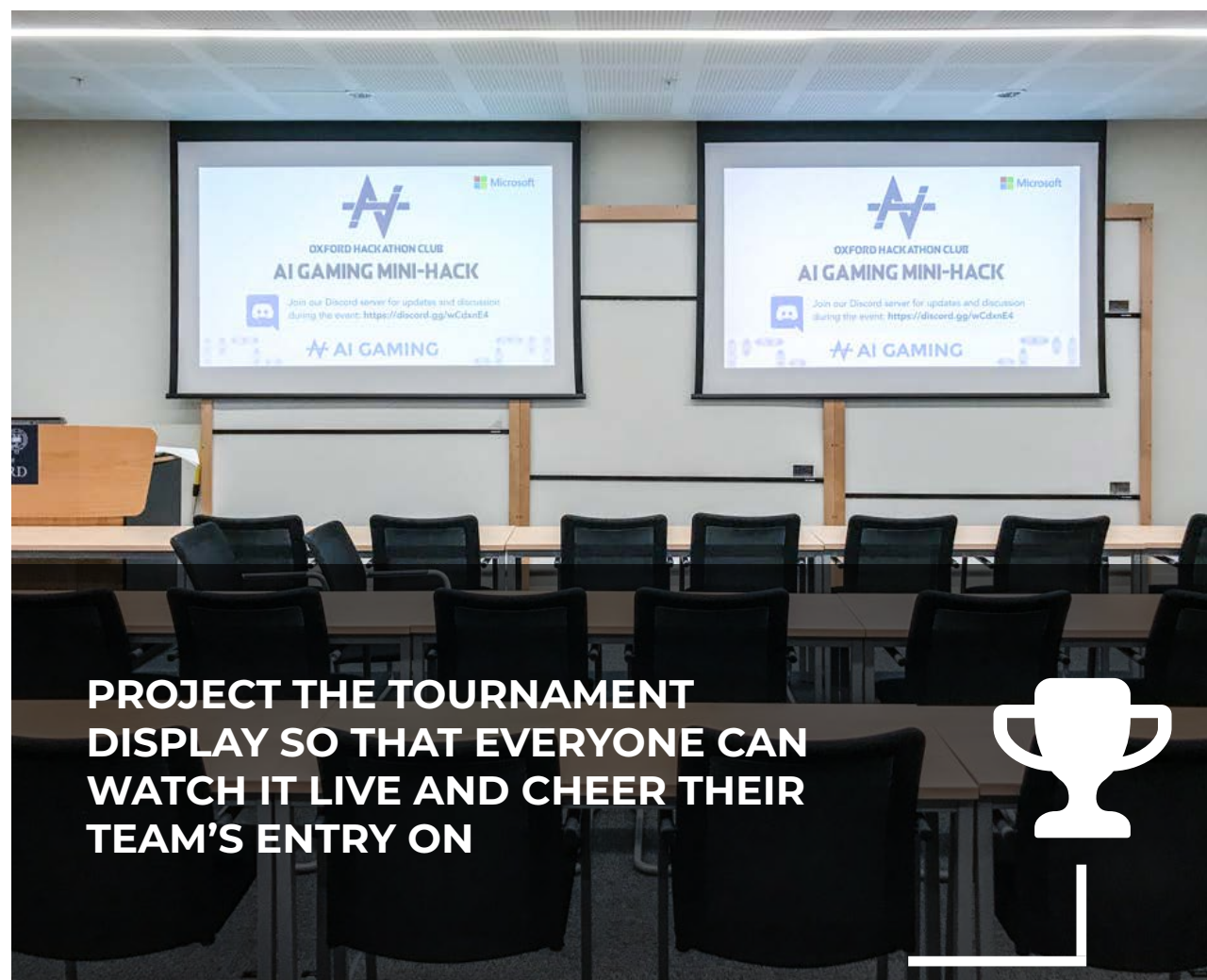
HOSTING THE EVENT

THE DAY OF THE EVENT

After all the planning and preparation, enjoy the event.

PUT THE PLANS INTO ACTION

On the day of the event the whole team should come together to prepare the venue, help with the hosting of the event and make sure that all of the event attendees enjoy taking part.

04-01

VENUE SETUP

Arrive at the venue in plenty of time to make sure that all laptops, projectors and presenting equipment work, and that you have time to do something about it if anything doesn't work. We suggest arriving 3 hours before the event start time.

Depending on what you have arranged with the venue, you will need to leave plenty of time to set things up, including:

- Putting up signs to direct attendees to the right rooms
- Displaying signs with wifi access details and event registration code
- Arranging tables so that people can see the projector screens and so they can work in teams or on their own
- Preparing a space for food and drink

- Preparing to register people on arrival.
- Displaying prizes
- Reviewing how to setup tournaments so you can create tournaments when you know how the event is going.
- Distributing any handouts like How To Sign Up For An Azure Account

04-02

ATTENDEE RECEPTION & ACCOUNT SIGN UP

You will need to check people on arrival to make sure that people have reserved places from event registration system. You need to do this to make sure that you don't exceed venue numbers with people turning up at the door without a reserved place.

After people have checked in they should be encouraged to find a place, get out laptops and connect to the wifi.

They should then register for an Azure trial account, create a Computer Vision API key and make sure they have signed up for the AI Gaming event using the event registration code. The Technical Assistants should oversee this activity to make sure that everyone understands the process and that everyone is signed up as quickly as possible

Have printed instructions for Signing Up For A Microsoft Azure Trial Account that people can follow.

04-03

EVENT STARTS - INTRODUCTIONS AND INTRO VIDEOS

At the event start time get everyone's attention and make any event or venue specific announcements like health & safety requirements.

- Explain the expected timings of the event based on our example schedule on page 7.
- Point out who the technical assistants are and that they will be mingling during the event to answer questions and give people pointers.
- Play the Event Intro Video
- Point people to the AI Gaming help pages at aigaming.com/help where there are specific help pages for the Match Game and the additional help videos on the MSP Events page.

04-04

RUN THE FIRST (TRIAL) TOURNAMENT

If you have the first tournament starting at 8:00pm as per our suggested schedule, make sure you have created the tournament by 7:30pm and at 7:30pm make an announcement telling people that a first tournament for prizes will run at 8:00pm.

5 MINUTE WARNING

5 minutes before the tournament begins make an announcement to warn everybody that the tournament will start in 5 minutes and that they should make sure they have registered to be in it. Remind them to make sure the code file they have submitted to the tournament runs and is error free.

You will be able to see how many people have submitted code to the tournament by looking at the Upcoming Tournaments tab on the GAMES -> TOURNAMENTS page. The tournament listing will show the "No. Of Players" that have entered the event.

DISPLAY THE TOURNAMENT SCREEN

Display the tournament on the projectors as the tournament plays out. Add a commentary if you can to get people invested in the tournament outcome. As you get down to the last rounds shout out the botnames that are still in the tournament and ask the teams that own them to identify themselves.

HAND OUT THE PRIZES

Hand out any prizes you have in order of results on the tournament display.
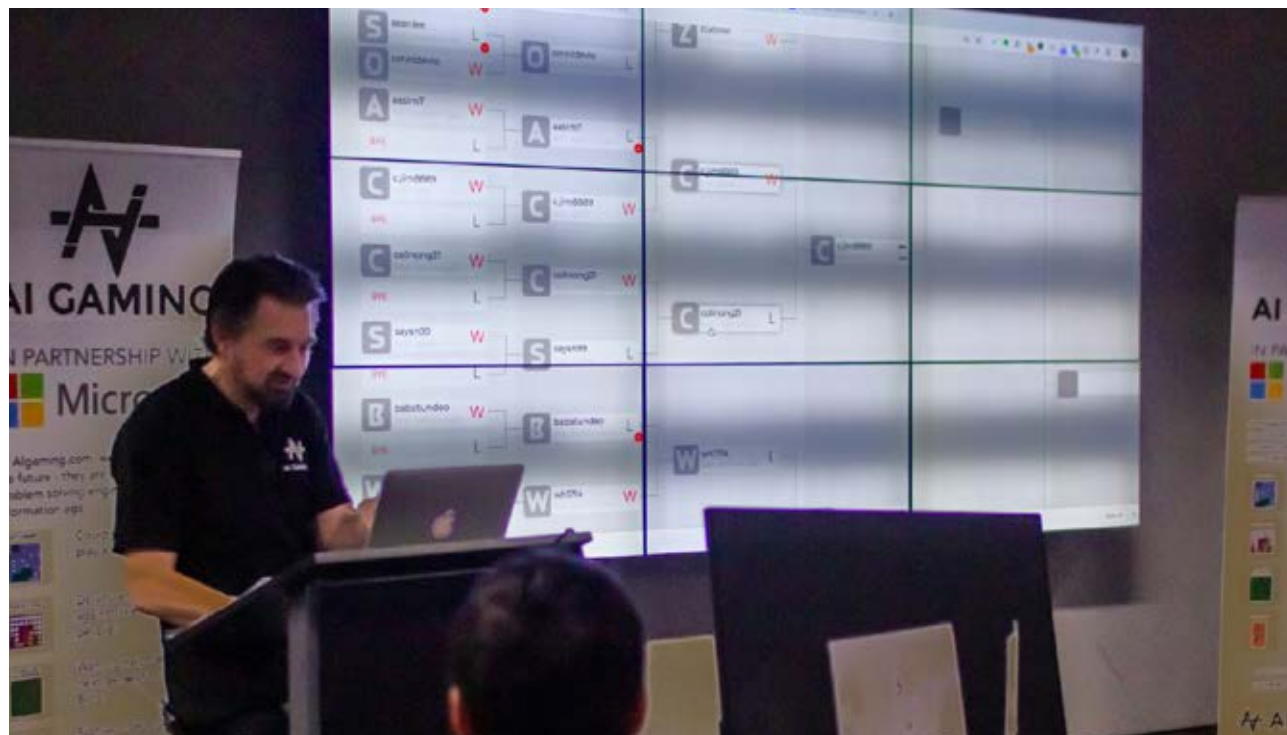
04-05

SETUP A SIMPLE FEEDBACK SYSTEM

If you can, setup a quick feedback system on a white board to take a poll of people's thoughts as they leave the event. Ask the following:

- Could not get my code to work
- Got my code to play a game
- I got landmarks working
- I got OCR working
- I added gameplay strategy
- Cool event - more like this? :)
- Not my thing - didn't really like event :(

When people leave the event ask them to make a mark on any of the statements that reflect their view of the event.

Photograph the final results and email it to the AI Gaming team with the name of the event.
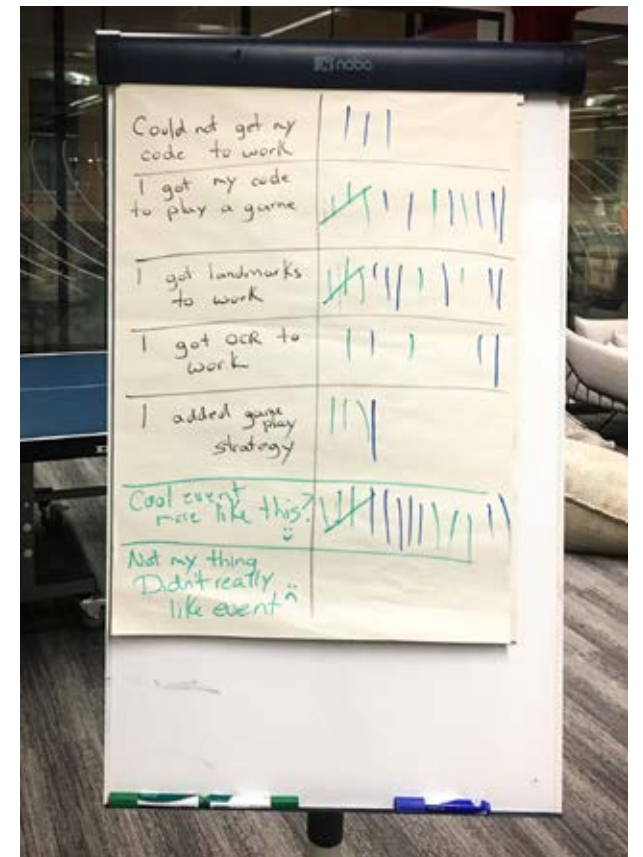
04-06

RUN THE FINAL TOURNAMENT

Make an announcement about the final tournament at least 15 minutes before you have scheduled it to start. Prompt everyone to make sure they have entered.

Keep checking how many people have entered the tournament from the GAMES -> TOURNAMENTS page and keep encouraging people to enter right up until the tournament start time.

Like the first tournament, display the tournament on the projector screen and provide a commentary for it if you can. If you have two laptops and two screens, you can show the tournament bracket on one screen and some of the live games on another screen.

After the final game show the section of the tournament display that details the 1st, 2nd, 3rd and 4th place botnames and with lots of clapping and cheering ask the winners to come up and collect their prizes.

05

MATCH GAME
OVERVIEW

SOLVE THE MATCH GAME USING MICROSOFT'S COGNITIVE API

The Match Game is an updated version of the Pairs game where players take turns to reveal two tiles at a time. The goal is to match all tiles in pairs.

05-01

GAME OVERVIEW

The challenge used at events is The Match Game. We have modified the classic pairs matching game to require the power of Azure Cognitive Services to be able to play it.

Users must analyse images and remember the location of matching tiles. However, in our version of The Match Game, no two tiles are the same, so, it is not sufficient to compare the images pixel by pixel. Instead, Azure Cognitive Services must be used to analyse the content of the images and to determine what the subject of the image is.

We may have two pictures of elephants. They may be very different pictures of elephants where one elephant is an adult and one is a baby elephant. The two images are not the same, but the content, or subject of the images is the same and so, the tiles match.

05-02

GAME RULES AND SCORING

You are presented with a set of tiles. Each tile contains an image. Each tile image has one matching image and the goal of the game is to match all pairs of images in a way that earns the highest score possible.

Tile images belong to three categories, Animals, Landmarks and Words. Tile images are concealed and players take turns to reveal two tile images at a time. If the revealed tiles 'match', they remain revealed and points are awarded for matching the tiles. The player with the most points at the end of the game is the winner. Players score 1 point for matching a pair of tiles.

The Bonus Category and the Score Multiplier

There is a Bonus Category that is specified in each round. If you match a pair of images that belong to the Bonus Category, the Score Multiplier, which starts at 1, is doubled and the score for matching the tile images is multiplied by the Score Multiplier. The Bonus Category then changes to another random category. If in the subsequent move you again match tile images in the new Bonus Category, the multiplier is doubled. This continues for each consecutive match you make in the Bonus Category. As soon as you do not make a match in the Bonus Category, the Score Multiplier is reset to 1. This allows a user to score 1, 2, 4, 8, 16 etc. points for consecutively matching tile images in the Bonus Category.

05-03

PLAYING THE GAME
....

Here is an example game board. When a game starts, all tiles are in the "face down" position.

Note that the "back" of the tiles contain a tip of what the tile image will show.

There are three categories of image - Animal, Landmark or Word. Advanced users can analyse the back of the tiles to improve their bot's performance.

A game finishes when either

- One player has matched all of their tiles
- A certain maximum number of moves have been carried out
- When a certain maximum time has passed.

The maximums are specified in the game style along with other factors like the size of the board. This game styles information is shown on the Game Info page which for the Match Game is at:

https://www.aigaming.com/GameInfo/ NewGameStyles?typeId=73

Note that quite different images have been matched successfully. For example, tiles 6 and 17 are very different views of an ostrich, but are matched with each other. Tiles 1 and 2 are both images of the Bunker Hill Monument. The content of the images is established by calling the Azure Cognitive Services Computer Vision API function, Analyse Image.

Also note that tile 16 contains a word: "Application". Advanced users can use the Text Analytics API function to interpret this image into text and match on that basis.

The same game board is presented to the two players in a game simultaneously and they compete to achieve the highest score by the time the game ends. Games can be viewed real-time and replayed later.

A COMPLETED GAME

The image above shows a completed game that ended in a draw with both players achieving a score of 6 points. You can also see that the Bonus Category for the last round of this game was Words.

05-04

MORE HELP
....

Full details of the Match Game challenge including tips on coding solutions are available at aigaming.com/help and choosing the "Match Game" help pages.

05-04

BEST APPROACH TO IMPROVING CODE PERFORMANCE

We recommend implementing the following steps in the following order, to make the greatest gains when improving the template code.

- Implement Landmark matching.
  - Copy the check_for_animal() function and use it to populate the check_for_landmark() function.
  - By matching Landmarks as well as animals you will match all tiles in the game much sooner.
  - One of the video resources shows you how to completely implement landmark matching.
- Implement text recognition and word matching
  - Like adding Landmark matching, adding the ability to identify and match Words will mean that you match all tiles in the games much quicker.
  - Landmark matching requires the addition of the Text Analytics API so is a little more difficult to implement than Landmark matching, but follows the same principals.
  - One of the video resources shows you how to completely implement this word matching
- Read the tile backs to match tiles from the same category
  - Once you can read the words on the tiles, you can also read the backs of the tiles where the category is displayed.
  - This improves your initial tile choices as you can choose tiles in the same category.
  - In some instances, if there are only two tiles in a particular category, you will have an instant match.
- Check if you can match tiles in the bonus category
  - If you have more than one pair of tiles that match, check to see if any of the matching pairs are in the bonus category and match these for extra points.
- Wait before matching any tiles to match tiles in consecutive Bonus Categories.
  - Get the most bonus points by consecutively matching pairs in the Bonus Category.
  - Deliberately do not turn over matching pairs until you have determined what image is on each tile and then proceed to match all of the tiles matching the bonus category each time. This will benefit from the bonus multiplier if you can match pairs in the bonus category consecutively.

05-05

MORE HELP

Full details of the Match Game challenge including tips on coding solutions are available at aigaming.com/help and choosing the "Match Game" help pages.