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Hello everyone, you have another pathfinding-related lecture ahead of you today, however, before I let Adam have the floor, I've come to explain to you what the group assignment that we'll want you to work on throughout the rest of the semester will be. In it, you'll be asked to-

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design an AI for a game of your choice and give a presentation about it here.

The rationale behind it is similar to that of the game AI design crash course labs that I teach – namely that, during this course, you get acquainted with a lot of important algorithms, but not with how to use them. It would be ideal if we could task you with actually implementing the AI for some reasonably complicated game, but that would be far too large an undertaking for a course like this. So, the next best thing that I could come up with was just having you go through the thinking process of designing the AI.

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Here is the roadmap for this task. First, you have a week to pick your team and its name, then another week to pick a game you'll work on and ideally get it approved by us. Then, you have another week to write the specification – I have prepared an example for you, so that you have an idea of what it means. After that, design the AI, make a presentation about it and present it here during the last lesson and lab of the semester, which falls on the 8th and 9th of January next year respectively. Before then, each team will have a consultation with us. We originally planned to have these during the labs, however, the labs we could free up for this purpose fall on 5.12., which would conflict with GDS, and 19.12. which is the last Friday before Christmas and I sincerely hope you have better places to be by then, as do we. These two labs will therefore be cancelled and we'll give you some other consultation slots that you'll be able to sign up for.

These will take place sometime between the two mentioned labs, so between 5.12. and 19.12. Notice that there isn't that much time between then and the deadline for the specification. I therefore strongly recommend that if you can put your teams together quickly, you start working on the project sooner than the last deadline.

For the consultations, you should have a rough idea of your design ready so that we have something to discuss – we'll try to give you some guidance and also tell you what areas to focus on.

It might seem strange that we are asking you to start working on this before you've gone through all the lectures, but, the last important algorithm that you might need we'll be presented at next week's lecture. After that, we'll dive deeper into that algorithm then switch to machine learning and AI of RTS games, but you should have all the most important tools you might need by next week.

Moving on-

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Here are some guidelines.

Most importantly, don't just look up how the game's AI was designed. The point of this assignment is to think about this problem yourselves.

Next, as I've said, you will be working in teams. There's 22 of you according to SIS, so aim for three or four people per team, which should result in six to seven teams. Those of you who won't find a team

by the end of next week will be put in teams randomly. I encourage you to make use of our discord channel – if you have an idea for a game you'd like to work on, post it there; you may find other people who'd be up for it. I also encourage you to consider whether you'll have the time and will to complete this assignment. If you come to the conclusion that you don't and you want to drop the course, that's fine, just please tell me, so that I don't assign you to a team – it would be kind of mean to your team mates if you stopped working on the group project midway.

Regarding your choice of game, anything goes, including your own games, you should just make sure that the AI systems in your game are sufficiently advanced so that you actually have something nontrivial to design. There are no hard-set rules for this, but, for example, Pac-man probably wouldn't be a good idea, unless you decided to do something really fancy with it.

The opposite problem would be if your AI was too expansive – in that case, it is possible to only focus on a part of the game's AI.

It's also ok to make adjustments to games, if you think they would be more fun or interesting that way, for example.

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Now, the obvious question at this point is – how detailed should your solution be; how to determine that you've done enough? This is tricky to answer in a general way, but here are two rules of thumb.

First of all, your solution should be detailed enough that you would know how to start coding it. So, once you come up with a design, try to imagine that you have to sit down and start typing it out – would you know where to begin? If not, you need to iron out some details.

Second of all, there is also a time constraint. The last lecture and lab of the semester are saved for your presentations, which gives us 180 minutes to work with. We are going to have six or seven teams, that means each of you can have something like 25 to 30 minutes for both your presentations and some questions. Shorter presentations will be accepted, the main point is to adequately explain your design, not take up the allotted amount of time, just try to work with this time window in mind. It's really not as long as it may seem at first glance.

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Speaking of your presentation, make sure to include a brief description of the game you've worked on, or perhaps a short trailer, so that everyone has an idea what you'll be talking about.

Also, if you are dealing with a game that has a variety of creatures that differ in specific implementations of some behaviours but the overall system is the same, there's no need to go into every one of them. For example, in Horizon Zero Dawn there are around 20 different machines. However, they mostly differ in specific implementations of behaviours such as movement patterns, attack patterns and so on. It definitely wouldn't be necessary to mention all that, though maybe picking one machine to demonstrate your design would be good.

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Last but not least, here are some useful resources you can use for inspiration, including the example specification I mentioned and a list of questions to consider when designing your AI. And that's it. Does anyone have any questions at this moment?

Alright, if you have any questions once you actually start working on this, don't hesitate to message us. With that, I bid you farewell and leave the rest to you.