Artificial Intelligence in Computer Games

GAM 376

Instructor: William Meyers

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Office Hours: M/W 10:00 – 12:00 pm, or by email appointment

Office: CDM 849

Phone: TBD

Website: piazza

Classroom: CDM 216, THUR 5:45 – 9:00pm

Description:

Artificial Intelligence (AI) is one of the essential components of a computer game. The course introduces basic concepts of AI in the gaming context such as finite state machines, fuzzy logic, subsumption architectures, planning and search. Emphasis will be placed on applications of AI in various genres of computer games. Students will work with implementations of common game AI algorithms for behaviors such as pathfinding and behavior selection.

Prerequisites:

PREREQUISITE(S): GAM 372 or SE 350 and GAM 325

Grading

- 60% Homework Assignments (complete 4 out 5, 15% each)
    - o 1) Math & Physics Review
    - o 2) State Driven Agents
    - o 3) Graph Search Algorithms
    - o 4) Pathfinding
    - o 5) Goal Driven Agent Behavior
- 30% Project
    - o 1 Final Project.
- 10% - Participation
    - o Being kind, helpful and participatory in class and on Piazza.
- No Final Exam

How projects and homework are graded according to two criteria:

1. Does it run and meet all of the requirements? This is worth 80% of the grade
2. How creative or impressive is the solution? This is worth 20% of the grade.

If a student turns in a project that runs and meets all the requirements, then she earns 80% or a B for the project. If the student has also solved the project assignment in a creative or impressive way, meaning that she did something unique and innovative in her solution, then she can earn up to another 20%.

Grading Late Projects

Every day a student's project is late will remove 10% points from that project's grade. For example, if a student completes a project of 97% (or A level) quality, but hand it in 12 hours late, she will earn 87% or a B for that project. If she were to hand it in 36 hours late, then she would earn a 77% or a C for that project, and so on.

ATTENDANCE AND TARDINESS

If you miss class, you're responsible for catching up on missed material by referring to Piazza and asking classmates.

Textbooks and printed resources:

- Funge, John *Artificial Intelligence for Games*. CRC Press 2009
- Buckland, Matt *Programming Game AI by Example*. Wordware Publishing. 2005.

Software:

- Visual Studio 2015 (C++)
- Azul Engine (C++)

Piazza Discussion forum:

- Statistics show: students who participate more and help other students <u>do better</u>!
    - o The correlation is ridiculous!
        - • Poor understanding / poor participation.
        - • Great understanding / Great participation
    - o As you master the material, help others learn!
        - • Want to be a Master programmer so master it!
- Everyone is **_expected_** and encouraged to participate on the Piazza discussion forum. All class-related discussion here this term.
- The quicker you begin asking questions on Piazza (rather than via emails), the quicker you'll benefit from the collective knowledge of your classmates and instructors. I encourage you to ask questions when you're struggling to understand a concept.
- All correspondence that is not personal in nature should be vectored through Piazza
- Sensitive material, use Piazza private note, not email.

- Keep the forum professional and positive, help each other out.
  - o Karma really pays off here.
  - o Help each other whenever you can.
    - • There will be a section where you'll need help (trust me).

NOTE: Do **_NOT_** post until you have watched the entire lecture **_FIRST_** (in class or online)

This will prevent frustration on all sides (members asking or answering questions)

Collaborating together on programming assignments

- You are encourage to work together
  - o Use the Piazza forums heavy
  - o Even share your material with others in the common directory
- Everyone is 100% responsible for the work they do.
  - o If you get help with a section of code,
  - o Please refactor the code
    - ▪ Comment and understand that material
    - ▪ Transform the code to **_make it yours_**
  - o Be able to answer **_any_** question regarding the code you commit
- If you gain significant support / help from another student
  - o Fully disclose the support / help you had in a Readme.txt file submitted with your assignments.
    - ▪ Disclosing the help, is **_not permission_** for copying the code.
    - ▪ Only there to clarify and acknowledge help you were given from a fellow student.
- If you are stuck and find yourself even tempted to plagiarize
  - o Ask for help !!!!
    - ▪ Use on Piazza,
    - ▪ Visit during offices hours, make an appointment
  - o **_Don't ever compromise your integrity!_**

Important Dates

- Jan 10, 2016: Last Day to add classes to WQ2016 schedule
- Jan 17 2016: Last day to drop classes no penalty, Last day to select pass/fail option
- Jan 18 2016: Grades of "W" assigned for WQ2016 classes dropped on or after this day
- Jan 22 2016: Last day to select auditor status
- Feb 21 2016:   Last day to withdraw from WQ2016 classes

Course Policies

Changes to Syllabus

This syllabus is subject to change as necessary during the quarter. If a change occurs, it will be thoroughly addressed during class, posted under Announcements in D2L and sent via email.

Online Course Evaluations

Evaluations are a way for students to provide valuable feedback regarding their instructor and the course. Detailed feedback will enable the instructor to continuously tailor teaching methods and course content to meet the learning goals of the course and the academic needs of the students. They are a requirement of the course and are key to continue to provide you with the highest quality of teaching. The evaluations are anonymous; the instructor and administration do not track who entered what responses. A program is used to check if the student completed the evaluations, but the evaluation is completely separate from the student's identity. Since 100% participation is our goal, students are sent periodic reminders over three weeks. Students do not receive reminders once they complete the evaluation. Students complete the evaluation online in CampusConnect.

Academic Integrity and Plagiarism

This course will be subject to the university's academic integrity policy. More information can be found at http://academicintegrity.depaul.edu/. If you have any questions be sure to consult with your professor.

Academic Policies

All students are required to manage their class schedules each term in accordance with the deadlines for enrolling and withdrawing as indicated in the University Academic Calendar. Information on enrollment, withdrawal, grading and incompletes can be found at: cdm.depaul.edu/enrollment.

Students with Disabilities

Students who feel they may need an accommodation based on the impact of a disability should contact the instructor privately to discuss their specific needs. All discussions will remain confidential.
To ensure that you receive the most appropriate accommodation based on your needs, contact the instructor as early as possible in the quarter (preferably within the first week of class), and make sure that you have contacted the Center for Students with Disabilities (CSD) at: csd@depaul.edu.

Lewis Center 1420, 25 East Jackson Blvd.
Phone number: (312)362-8002
Fax: (312)362-6544
TTY: (773)325.7296

Retroactive withdrawal

This policy exists to assist students for whom extenuating circumstances prevented them from meeting the withdrawal deadline. During their college career students may be allowed one medical/personal administrative withdrawal and one college office administrative withdrawal, each for one or more courses in a single term. Repeated requests will not be considered. Submitting an appeal for retroactive withdrawal does not guarantee approval. Information on enrollment, withdrawal, grading and incompletes can be found at:
http://www.cdm.depaul.edu/Enrollment-Policies.aspx