**SciOly B Game Agent Trial Event Planning**

First Version: April 20, 2024 Updates:April 25

Project Title: **SciOly B Trial Event: Game Agent**

* Create an interactive, fun event that requires students to understand basic concepts of Reinforcement Machine Learning.
* The Camas SciOly B Invitational is in mid-December. We’d like to have this ready as a trial event. This requires that we send to schools by early October the task and any related materials.

Initiation:

* Review, update, and complete the planning category task decisions, and this document
* Recruit and build planning team
  + Looking for folks who want to think “big picture”: with some who have some experience doing so, and some who are also taking on one of the many sub-tasks.
* Design and build a website (or similar?) to support this project
* Choose a product repository and vms
  + Schools use Google Drive and folders, pro’s use Git … our project ??
* Describe how this project fits into its broader parent project of K-12 AI/ML core curriculum integration scope and sequence
  + This project fits in two ways:
    - It serves as a catalyst to introduce these ideas to those ready to move, and as a test of ideas to see how to design challenges that students can be successful at and enjoy doing, possibly during the school day
    - While school educates everyone, these events allow those who are ready to “go further” an opportunity to do so.
* Describe how this project fits within local, state and national workforce development, and long-term national security interests
  + Machine Learning and AI is coming to us all in nearly all endeavors of the workforce. It will revolutionize problem solving just like calculators changed computation in the mid-70's, only this is more far-reaching. The public education system took over 20 years to embrace calculators. Let's do what we can to shorten the time it takes for AI/ML to be accepted and taught/learned so our kids can be competitive in the world workforce. An activity such as this will help.

Planning:

* Task Decisions:
  + :Which game engine we will use
    - We will use Godot (?) to build three contest games
  + Any limitations on GenAI usage, if so, what
    - CIPA compliance may not allow most (all?) LLM’s for MS students
    - This project should encourage kids to use AI tools to prepare their work
  + Any limitations on Agent models and coding software
    - We will use Python (?)
  + Format of the event 50 minutes
    - Teams prepare their solution ahead of time, sign up for a 15-minute presentation time slot during the competition day (?)
    - They then run their Agent “against” each game, first the easier level, then the harder one
    - They present their AI-assistant chat dialog document.
    - They present their code for inspection and Q&A.
    - If the SciOly event gives out 5 meals in each event, then the top six team Agents are launched into the game field at the same time to see which one is best. Where “best” is defined as which one can be the first team Agent to be the last one in the field in three episodes of the game. Etc. This would be the entertainment on the big screen whilst awaiting the scoring room to finish its work.
    - See “The Game for 2025” document for this first game, and the attempt to set the pattern for future games.
  + How much provided ahead of time
    - Everything, including the game they need to prepare their Agent to run against. Include a basic sample Agent, tutorials, links, recommended AI assistant ( if allowed), game difficulty levels to prepare for, mentor training guide.
  + How to score team submissions
* Task: Personnel and roles
  + Who wants to “play” and what do you want to do, and have the time to do?

Execution:

* Design and build the full game, with different levels of difficulty, at least one   
  “easy” game level to solve with a RML agent, and one “hard” level
  + The games are MUCH more interesting than "snake" or "pong" ... our Basic Agent can be expected to successfully complete an episode (easy game), and possibly no team’s Agent can be successful (hard game)
  + We design and build the game field, and Agent “weigh and measure” tools
  + We design and build a Basic Agent
* Design and write the Game Agent trial event task sheet following the SciOly format
* Design and build the required (? recommended?) Game Agent library
* Design and create video and text examples and tutorials
* Design and create a mentor role guide for how to train their teams
* Design and create a scoring rubric for the event, with these four components
  + “Easy” game score
  + “Hard” game score
  + Documentation score, to include copy of AI-chat log
  + Presentation score, to include speaking skills and teamwork skills
  + Look at the scoring guide for SkillsUSA Robotics Automation, and the rubrics for the Seaperch TDR to get started

Control:

* Use mostly asynchronous comms for decision making and planning and completing the work
* September 9: Due date for final drafts of all materials. This leaves about 3 weeks to prepare for publishing of materials
* October-November: Monitor input from teams as they review the materials and ask questions, probably respond to questions with additional guidance to teams
* December: Several of us to be at the Camas Invitational in December to monitor the event, gathering informal feedback, and probably help score
* January-February: review feedback from teams at the invitational given in a survey. Modify materials, and prepare to run the event again this year or next year.

Close:

* This project will end at the end of the next season, about March 2025. If all goes as planned, we will turn over the event to the WA State SciOly Board to decide what they want to do with it, to include a recommendation from us.
* We may be asked to further refine the event, or prepare a presentation for other states or nationals … if so, that will be another project.
* We may be asked to create a HS version of this event … if so, that will be another project.
* We may be asked to create a SkillsUSA or FBLA version of the event … if so, that will be another project.