ChessEngine.AI

1.0.0

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Chapter 1

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2.1 Class List

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Chapter 3

Namespace Documentation

3.1 ChessEngine Namespace Reference

3.2 ChessEngine.AI Namespace Reference

Classes

- class ChessAI

  An abstract class that is the base type for all chess AIs.

Chapter 4

Class Documentation

4.1 ChessEngine.AI.ChessAI Class Reference

An abstract class that is the base type for all chess AIs.

Public Member Functions

- **ChessAI** (ChessColor pTeam)
- void **Update** ()

  Should be invoked every frame to update the Chess AI even when it is not its turn.
- void RequestBestMove (int pMaxDepth, float pMaxTime)

  Submit a best move request to the AI.
- void DelayBestMove (float pSeconds)

  Delays the submission of this ChessAIs best move (unless demanded) for pSeconds seconds.
- void SetInstance (Instance pInstance)

  Directly set the 'ChessInstance' for this AI. This cam be useful for instances where the GUI wants the ChessAI to use its exact state.
- void **SetStateToNewGame** ()

  Resets the chess engine instance to a 'new game' state.
- void SetStateToFEN (string pFEN)

  Sets the ChessInstance's state based on the provided FEN string.
- abstract void **OnUpdate** ()

  Invoked after every 'Update' call. Useful for executing any logic every frame. Recommended AI best move determination logic is here, you can use 'IsBestMovePending' to check if there is a best move to limit planning time only to during best move requests.
- abstract void **OnBestMoveRequestUpdate** ()

  Invoked after every 'OnUpdate' in any frame where 'IsBestMovePending == true' and 'IsBestMoveDelayed == false'. Logic to determine best moves should not be executed in this loop as a submission delay causes it to not be executed. It is best practice to submit ready best moves in this callback unless they were demanded, this will prevent any non-demanded submissions while there is a best move submission delay set.
- abstract void OnBestMoveRequested (int pMaxDepth, float pMaxTime)

  Invoked immediately after a best move is requested.
- abstract void **OnBestMoveDemanded** ()

  Invoked immediately after ChessAI.DemandBestMove() is invoked, this tells the chess AI that a 'best move' is being immediately demanded. It is the responsibility of the AI to then submit the actual move using ChessAI.SubmitBestMove(TileIndex pFrom, TileIndex pTo).
- abstract void OnBestMoveSubmitted (TileIndex pFrom, TileIndex pTo)

  Invoked after a 'best move' is submitted by the Chess AI.

Protected Member Functions

- void **DemandBestMove** ()

  Demands that the AI submit a best move immediately.
- void SubmitBestMove (TileIndex pFrom, TileIndex pTo)

  Submits a best move from the tile pFrom to pTo.

Properties

- TimeManager **TimeManager** `[get]`

  A reference to the TimeManager used by this ChessAI.
- bool **IsBestMoveDelayed** `[get]`

  Returns true if the there is currently a delay preventing this ChessAI from submitting a best move (unless demanded).
- float **DelayBestMoveToTime** = float.NegativeInfinity `[get]`

  When not equal to float.NegativeInfinity this chess AI does not submit a best move (unless demanded) til at Time↩ Manager.ElapsedTime is >= DelayBestMoveToTime.
- ChessColor **Team** `[get]`

  The team the AI is playing for.
- Instance **ChessInstance** `[get]`

  A reference to an instance of a chess engine that contains the current state of the game.
- bool **IsBestMovePending** `[get]`

  Returns true if the AI is currently generating a 'best move', otherwise false.
- float **BestMoveRequestTime** `[get]`

  The TimeManager.ElapsedTime the 'best move' was requested at.
- int **BestMoveSearchDepth** `[get]`

  The maximum search depth specified with the last 'best move' request.
- float **BestMoveSearchTime** `[get]`

  The maximum search time in milliseconds specified with the last 'best move' request.

Events

- Action< int, float > **BestMoveRequested**

  An event that is invoked whenever a 'best move' is requested from the AI. Arg0: int - Search depth, the maxmimum depth the AI is allowed to look for moves at. Arg1: float - Search time, the maximum time in milliseconds the AI can spend coming up with a 'best move'.
- Action< TileIndex, TileIndex > **BestMoveSubmitted**

  An event that is invoked whenever the AI submits a 'best move'. Arg0: TileIndex - The 'from' tile index. Arg1: TileIndex - The 'to' tile index.

4.1.1 Detailed Description

An abstract class that is the base type for all chess AIs.

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4.1.2 Member Function Documentation

4.1.2.1 DelayBestMove()

```
void ChessEngine.AI.ChessAI.DelayBestMove (
            float pSeconds )
```

Delays the submission of this ChessAIs best move (unless demanded) for pSeconds seconds.

Parameters

pSeconds	The number of seconds to delay the best move submission (unless demanded) for.

4.1.2.2 OnBestMoveRequested()

```
abstract void ChessEngine.AI.ChessAI.OnBestMoveRequested (
            int pMaxDepth,
            float pMaxTime )  [pure virtual]
```

Invoked immediately after a best move is requested.

Parameters

pMaxDepth	The maximum depth the AI can explore. If less than or equal to 0 then this is infinite.
pMaxTime	The maximum time in milliseconds the AI can spend coming up with a 'best move'. If less than or equal to 0 then this is infinite.

4.1.2.3 OnBestMoveSubmitted()

```
abstract void ChessEngine.AI.ChessAI.OnBestMoveSubmitted (
            TileIndex pFrom,
            TileIndex pTo )  [pure virtual]
```

Invoked after a 'best move' is submitted by the Chess AI.

Parameters

pFrom	
pTo	

4.1.2.4 RequestBestMove()

```
void ChessEngine.AI.ChessAI.RequestBestMove (
            int pMaxDepth,
            float pMaxTime )
```

Submit a best move request to the AI.

Parameters

pMaxDepth	The maximum depth the AI can explore. If less than or equal to 0 then this is infinite.
pMaxTime	The maximum time in milliseconds the AI can spend coming up with a 'best move'. If less than or equal to 0 then this is infinite.

4.1.2.5 SetInstance()

```
void ChessEngine.AI.ChessAI.SetInstance (
            Instance pInstance )
```

Directly set the 'ChessInstance' for this AI. This cam be useful for instances where the GUI wants the ChessAI to use its exact state.

Parameters

pInstance	The ChessInstance reference to use as this AIs game state.

4.1.2.6 SetStateToFEN()

```
void ChessEngine.AI.ChessAI.SetStateToFEN (
            string pFEN )
```

Sets the ChessInstance's state based on the provided FEN string.

Parameters

pFEN	

4.1.2.7 SubmitBestMove()

```
void ChessEngine.AI.ChessAI.SubmitBestMove (
            TileIndex pFrom,
            TileIndex pTo )  [protected]
```

Submits a best move from the tile pFrom to pTo.

Parameters

pFrom	The tile the moving/attacking piece is moving from.
pTo	The tile the moving/attacking piece is moving to.

The documentation for this class was generated from the following file:

- ChessAI.cs

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