Object Tracking and Image Analysis for Observing and Reviewing Miniatures Games
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What is a Miniatures Game?
Miniatures games are a form of tabletop game where a player controls a group of models, and their moves are measured in inches rather than using any form of grid.

What Problem is Being Solved?
With the rise in popularity of streaming services such as Twitch and Facebook Live, miniatures game developers and players have made numerous attempts to broadcast these games. However, due to lack of access to critical position information, game announcers can only give guesses to the viewer about strategic gameplay.

What Information is Needed?
- **Distance From Models:** Since everything in the game is determined by inches, getting distance measurements are critical.
- **Line of Sight:** Since most targeting rules require line of sight, the ability to easily check what you can see from any point is important.
- **Model Locations:** Keeping track of models for an announcer should save them time.

Tools Used
- Python
- OpenCV

References:

Implementation Results
- **Model Locations**
- **Distance from models**
- **Line of Sight**

Model Locations
By having the user identify each model once, the software then attempts to find that model in each future frame. While this feature works well with the largest base size (120mm) it often fails at the smallest (30mm) (Fig 1 success Fig 2 failure).

Distance From Models
By following a specific setup process, the number of inches in each pixel is determined. Using that information the software can get any needed distance from a model. (Fig 3) This feature was a complete success and in testing was accurate with within 1/8th of an inch.

Line of Sight
By having the user define terrain, the software is able to calculate line of sight from any point in the play area. (Fig 4) This feature works well but needs graphical improvements.

Future Work
- Improve the graphical representation of line of sight
- Improve model tracking for smaller base sizes

Fig 1 (Model Location)
Fig 2 (Failed Model Location)
Fig 3 (Distance from Models)
Fig 4 (Line of Sight)