

Haunted Bot

Ages 8-14 + parents · 2-6 players · ~10 min a case · 33 cards + a die · no screens

OBJECTIVE

Boo-Bot hands a ghost cookie to every guest in a ghost costume. It learned from last year's party photos, but in those photos the ghosts all had something else in common too. So Boo-Bot may have learned the wrong rule. Work out which rule it learned, then fix its photos so only the right rule fits: a ghost is anyone wearing a SHEET.

MATERIALS

21 Guest cards, 6 Rule cards, 6 Case cards, the grown-up guide, one die, a pencil and scrap paper.

SETUP

- 1 Pick one player to be Boo-Bot. Boo-Bot keeps the grown-up guide folded so the detectives can't see it. A grown-up is a great Boo-Bot the first time.
- 2 Lay out the 6 Rule cards face up: SHEET, WHITE, MOON, FOG, BOO, CANDY. Shuffle the 21 Guest cards into a face-up pile everyone can look through.
- 3 Draw 5 pumpkins on a scrap of paper. That's the team's score for this case.

OPEN A CASE

- 1 Pick a Case card and read its story aloud. Pull its photo guests out of the pile and lay them in a row. Those are the photos Boo-Bot learned from.
- 2 Find the suspects. For each Rule card, check every photo: does every ghost have that clue, and does no other guest have it? If not, turn the card face down. You should have 3 suspects left, always including SHEET.
- 3 Boo-Bot looks up the case in the guide and rolls the die. That's the rule it learned. It never says which.

TEST BOO-BOT

- 1 Detectives pick any guest from the pile (not the photos) and show it to Boo-Bot.
- 2 Boo-Bot checks only its secret rule: if the guest has that clue, it says BOO! and hands over a cookie. If not, it says No cookie. Cross out 1 of the team's pumpkins.
- 3 Turn face down every suspect that would have answered differently. Keep testing until one suspect is left, or guess early.
- 4 Say your answer out loud. Wrong guess: cross out 2 pumpkins and keep testing. Right guess: Boo-Bot cheers and shows the guide.

FIX THE PHOTOS

- 1 Now fix the training data, even if Boo-Bot got lucky and learned SHEET. Wrong rules still fit the photos, so next year's bot could learn them.
- 2 Add guests from the pile to the photo row, one at a time. Each one costs 1 pumpkin. Stop when SHEET is the only rule that fits.
- 3 Pumpkins left = your score for the case. Run out and the case scores 0. Play the next case with a fresh 5.

HOW TO SCORE

- 1 Each case starts at 5 pumpkins. Tests and fix cards cost 1, a wrong guess costs 2.
- 2 A sharp team never needs more than 2 tests or 1 fix card per case, so 2 or more pumpkins is a perfect case.
- 3 Play all six cases for a full party. Add up your pumpkins and try to beat it next Halloween.

TIPS

- 1 Every case has 3 suspects, and with good tests 2 is always enough. Testing random guests needed more than 2 in 30% of 3,600 practice games.
- 2 Pick a guest who has one suspect's clue but not another's. Whatever Boo-Bot says, a suspect goes face down.
- 3 A guest who has every suspect's clue, or none of them, gets the same answer from every rule, so it tells you nothing. That was 11% of the guests in the pile.
- 4 To fix the photos, look for one guest who isn't a ghost but has both wrong clues. One card like that fixes every case.

WHAT THE GAME TEACHES

- 1 A model learns whatever rule fits its training examples. It can't tell which pattern you meant.
- 2 When the examples share an accident (every ghost photo was taken at night), a wrong rule fits just as well as the right one. That's called a spurious correlation, or a shortcut.
- 3 You find a shortcut by testing the model on new examples that split the rules apart, like a ghost in daylight.
- 4 The fix is better data: add examples that break the accident, like a white snowman. A bigger pile of the same photos wouldn't help.
- 5 In a famous experiment, researchers trained a model on wolf photos that all had snow in them, and it learned that snow means wolf.

VARIANTS

- 1 Rival detectives: take turns picking the test. Whoever names the rule first keeps the Case card. Most Case cards wins.
- 2 Be the trainer: pick five photos yourself so that three rules fit, and challenge a friend to find which one you're thinking of.
- 3 Big kids: skip the suspects step. Test from the start and see how many tests it takes.

PRINT TONIGHT

Guest, Rule and Case cards on Avery 5388 at Actual Size / 100% (never Fit to page). Print the grown-up guide on plain paper for whoever plays Boo-Bot. You also need one die and a pencil.

33 cards = 11 Avery 5388 sheets. Grown-up guide: 1 page, plain paper.