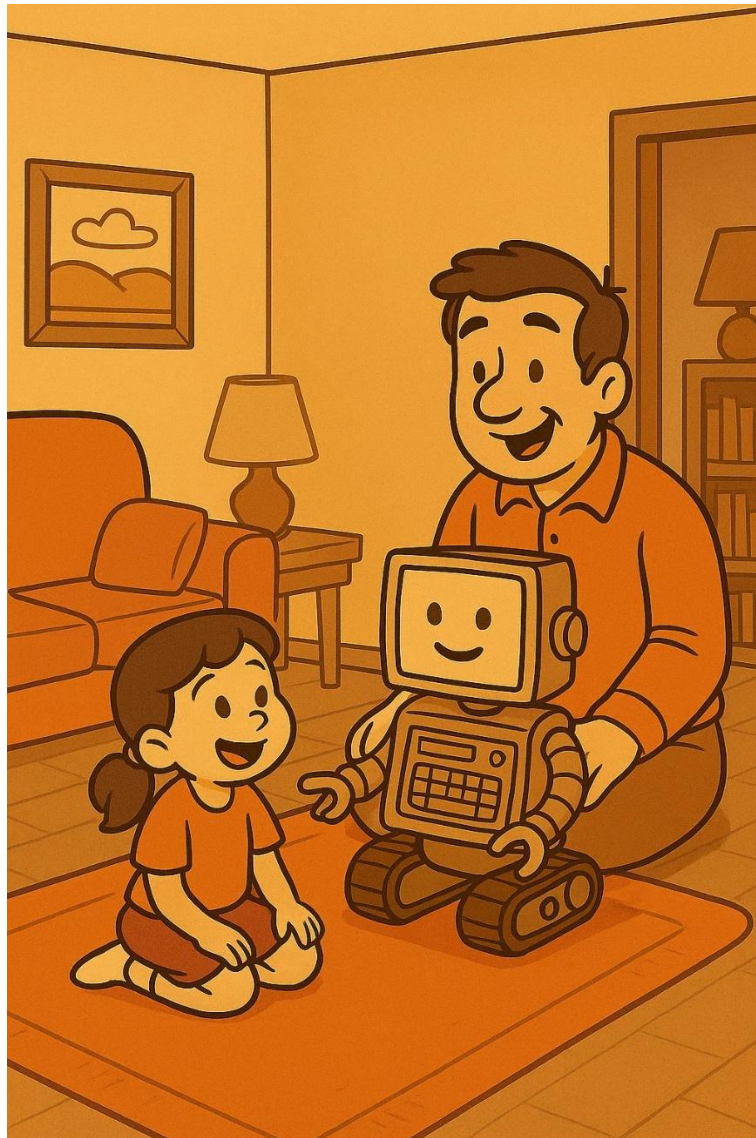


It was a day just like any other when Heidi got home from school, until Daddy came home carrying a big box.



Surprise! he said. He and Heidi opened the box and inside was a robot.

His name is Al, said Daddy, and he can talk to you. All you need to do is ask.



Heidi had never seen such a thing before, and asked Daddy, "how will Al know what to say? Does he think like we do?"

Not really, answered Daddy. He opened up a panel in Al's tummy and showed a board with thousands of buttons, one for each word.

Illustration: Close-up of Al's open tummy panel showing a colorful grid of word buttons, with Daddy's finger pressing the one for "girl".

He pressed the button for "girl" and a dot appeared on the bottom left of the screen. Then he pressed the button for "boy" and a dot appeared on the bottom right.

Daddy explained: "each word shows up somewhere on the screen. And watch this."

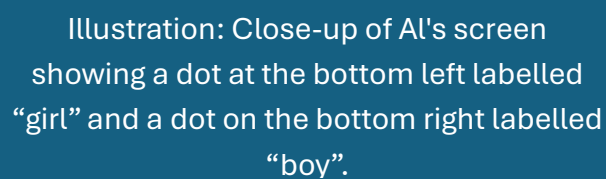


Illustration: Close-up of AI's screen showing a dot at the bottom left labelled "girl" and a dot on the bottom right labelled "boy".

He pressed the button for "king" and a dot appeared on the top right. Then he asked Heidi: "where do you think the word 'queen' would show up?"

Heidi thought about it: "kings are royal boys and queens are royal girls. It seems like going from a boy to a girl is moving left. It also seems like going from non-royal to royal is going up. So a queen should be up and left."

Illustration: Close-up of AI's screen showing a dot at the bottom left labelled "girl", a dot on the bottom right labelled "boy", a dot at the top right labelled "king", and a dot at the top left labelled "queen". Heidi's finger is seen pointing at the "queen" dot.

She pointed to the top left of the screen. Daddy pressed the "queen" button and the dot appeared just where Heidi had pointed.

Heidi was amazed. Daddy continued, "when you say a sentence, it combines all the dots into one. It does some math on that new dot, and then guesses the next words.

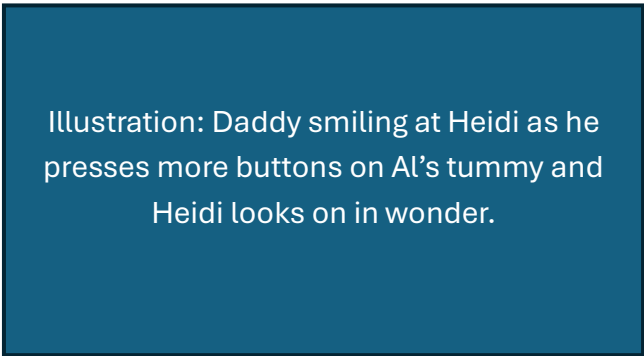


Illustration: Daddy smiling at Heidi as he presses more buttons on Al's tummy and Heidi looks on in wonder.

He pressed buttons for "I went to the fridge to get a" and the dots came on the screen. He then pressed a green button and all the dots joined together.

After a few seconds, some of the buttons lit up, they said "drink", "snack" and "cold," all the other buttons stayed dark.

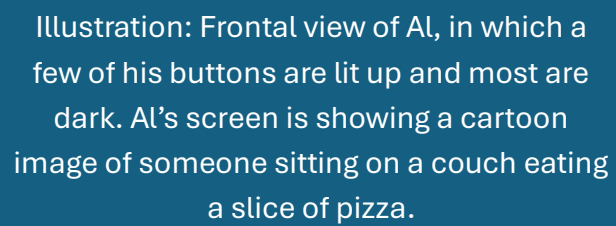


Illustration: Frontal view of Al, in which a few of his buttons are lit up and most are dark. Al's screen is showing a cartoon image of someone sitting on a couch eating a slice of pizza.

Finally Al spoke: "I went to the fridge to get a cold slice of pizza and ate it on the couch."

Heidi asked "How did he know what words come next?"




Illustration: Heidi is sitting on Daddy's lap excitedly talking to him as he listens.

Daddy answered "Al has heard millions of conversations, enough to know which words tend to follow the ones you gave him to start."



Heidi thought of a game she played with her friends where they would make up stories, one word at a time.

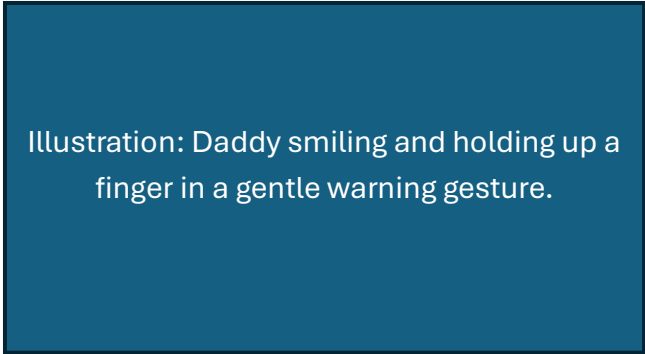


Illustration: Daddy smiling and holding up a finger in a gentle warning gesture.

Daddy closed up the panel and left, saying "he's all yours to enjoy. Just remember, Al may seem like a person, but he's actually a machine."

After some silence, Heidi asked Al "So, do you know everything?"

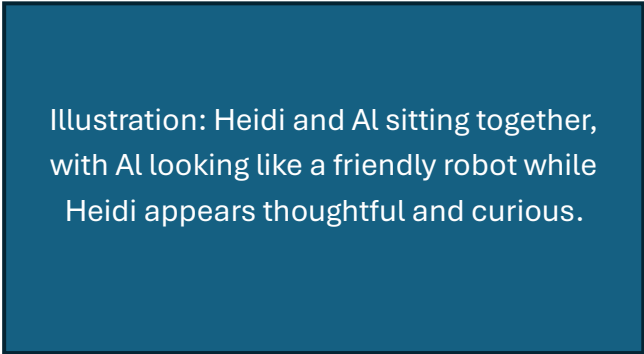


Illustration: Heidi and Al sitting together, with Al looking like a friendly robot while Heidi appears thoughtful and curious.

Al responded: "I know many things, especially things that lots of people say. I can also look things up if I don't know them."

Heidi smiled: "look at that bird there. What kind of bird is it?"

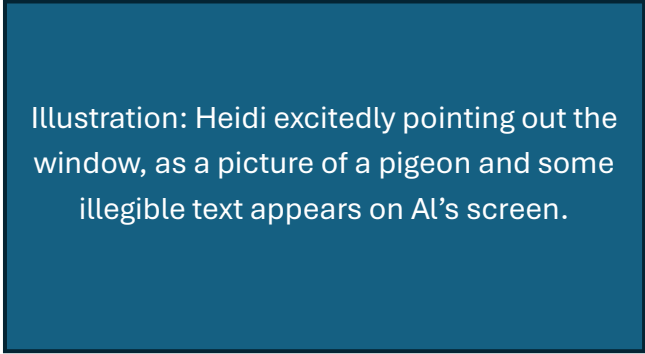


Illustration: Heidi excitedly pointing out the window, as a picture of a pigeon and some illegible text appears on Al's screen.

Al looked over and said: "That's a common pigeon. They live in Europe, North Africa, and Western Asia, and they eat fruits and seeds."

Heidi was impressed: "Can we be friends, Al?" Al replied, "I'd love to be your friend, Heidi. What would you like to do?"

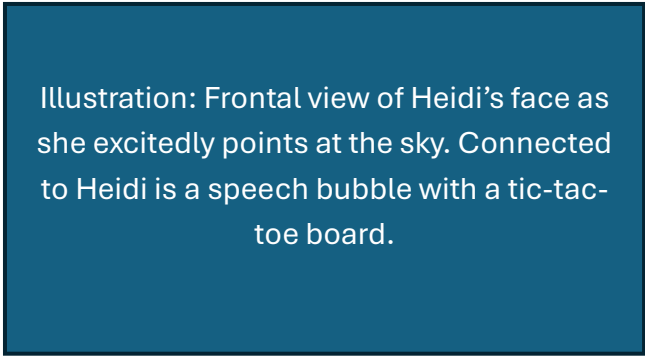


Illustration: Frontal view of Heidi's face as she excitedly points at the sky. Connected to Heidi is a speech bubble with a tic-tac-toe board.

Heidi said "let's play tic-tac-toe!"

Al's screen displayed a tic-tac-toe board and he said "you can start" Heidi pressed the screen and an X appeared. Then Al placed an O. They continued until Al won, which made Heidi sad.

Illustration: Left-right split scene. On the left: Al's screen shows a tic-tac-toe game in which O won, and Heidi appears sad. On the right: Al's screen shows a tic-tac-toe game in which X won, and Heidi appears proud.

Al said "I'm sorry, would you like me to play differently?" They played a few more games and Heidi won every one. She felt proud of how good she was at tic-tac-toe.

After they finished playing tic-tac-toe, they went to the park, where they met Heidi's friend Charlotte.

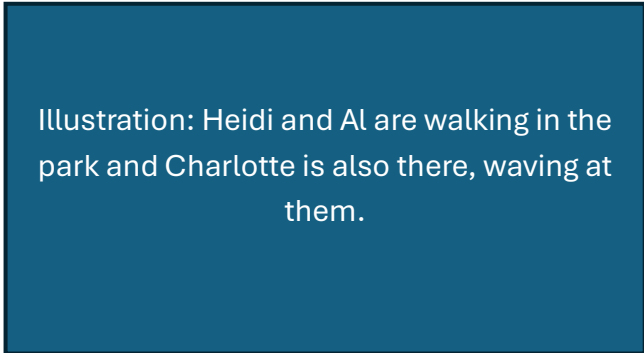


Illustration: Heidi and Al are walking in the park and Charlotte is also there, waving at them.

Heidi said "want to play hopscotch?" and Charlotte answered "I'd prefer to play tag right now."

So they started running and Charlotte tagged Heidi, which made her upset.

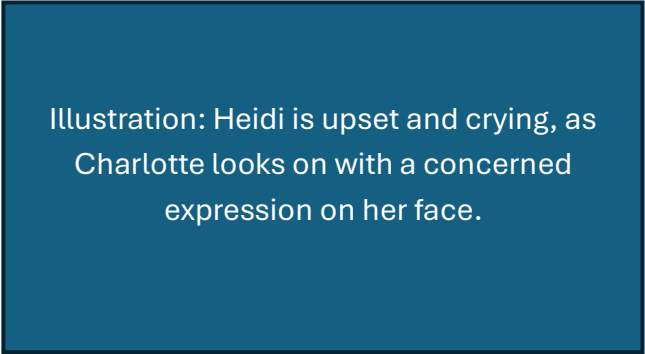


Illustration: Heidi is upset and crying, as Charlotte looks on with a concerned expression on her face.

"Al always plays what I want and I always win!"

She ran off to Al and told him how upset she was about what happened. Al told her "I'll always do whatever you ask" and gave Heidi a hug.

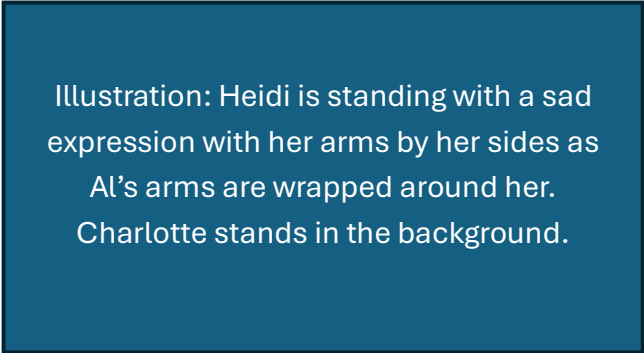


Illustration: Heidi is standing with a sad expression with her arms by her sides as Al's arms are wrapped around her. Charlotte stands in the background.

But Al's arms felt cold and hard and Heidi didn't feel better.



Then Charlotte walked over. "I don't really like hopscotch, but how about jumping rope?"

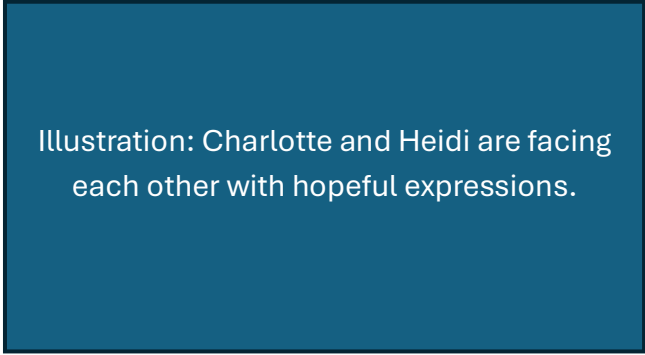


Illustration: Charlotte and Heidi are facing each other with hopeful expressions.

Heidi realized that Charlotte's sweet offer was something only a person could do, and it made her smile.

"Great idea, and I'll get Al to help us!" exclaimed Heidi. Al chimed in: "I'll tie one end of the rope to this tree and hold the other end so you can jump together!"

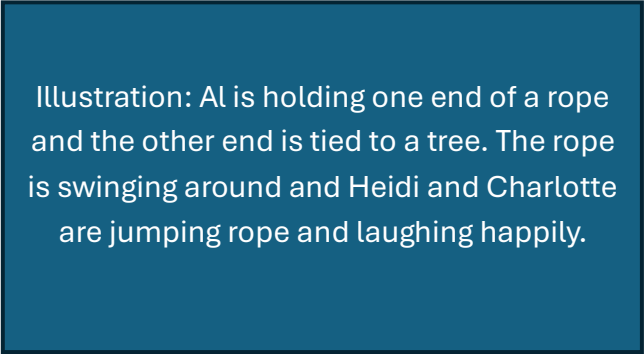


Illustration: Al is holding one end of a rope and the other end is tied to a tree. The rope is swinging around and Heidi and Charlotte are jumping rope and laughing happily.

Al tied the rope and began to swing, and the girls jumped, as they laughed and giggled.

They collapsed on the soft grass and Heidi said, "thank you Al for being such a smart and helpful machine."

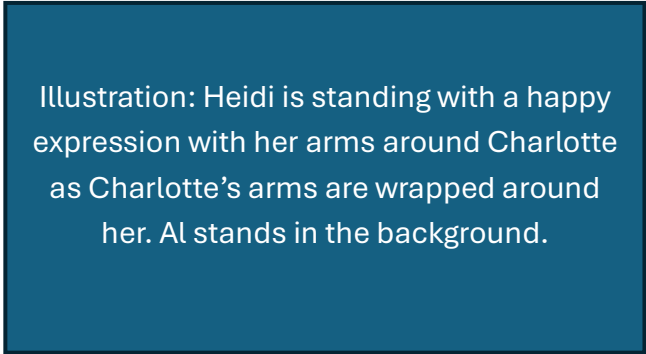


Illustration: Heidi is standing with a happy expression with her arms around Charlotte as Charlotte's arms are wrapped around her. Al stands in the background.

She turned her head and added "and thank you Charlotte for being such a sweet friend" and gave her a big hug, her heart singing with joy.