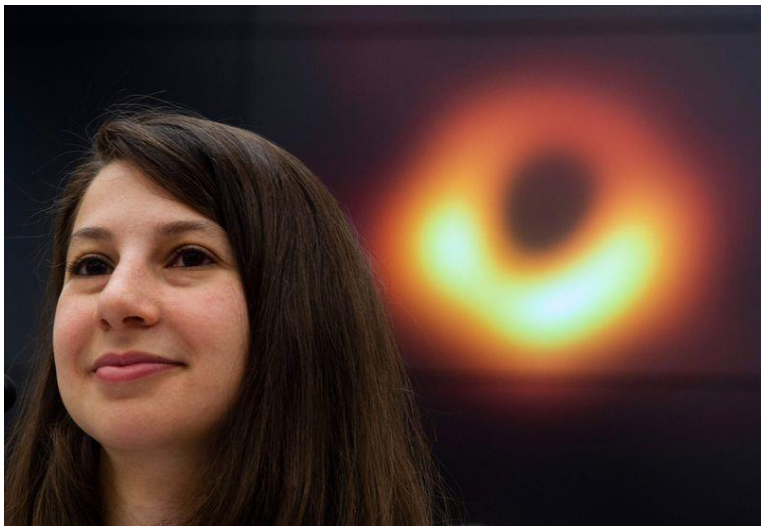
12 Katie Bouman

6 points

Introduction

Katie Bouman (1989) is a PhD student in computer science and artificial intelligence at the Massachusetts Institute of Technology (MIT). Four years ago, she led the creation of an algorithm that would eventually lead to the first image of a supermassive black hole at the heart of the Messier 87 galaxy, some 55 million light years away from Earth.



The data used to piece together the image was captured by the Event Horizon Telescope (EHT), a network of eight radio telescopes spanning from Antarctica to Spain and Chile. Bouman's role, when she joined the team working on the project seven years ago as a 23-year-old junior researcher, was to help build an algorithm which could construct the masses of astronomical data collected by the telescope into a single coherent image.

As an example, consider you get 4 partial images of 2 columns and 3 rows like these:

```
00   11   11   00
01   00   00   10
00 , 11 , 11 , 00
```

Then you can concatenate them creating the final image:

```
00   11   11   00   00111100
01 + 00 + 00 + 10 = 01000010
00   11   11   00   00111100
```

Just to make you feel like Katie, could you write a program that constructs an image from partial small images?

Input

The first line of the input contains the number of columns and rows of each partial small image.

The second line represents the total amount of partial small images to be joined sequentially.

Then the following lines will represent each of the small images.

Output

The output is the final image formed by the concatenation of the partial small images.

Example 1

Input

```
2 3
4
00
01
00
11
00
11
11
00
11
00
10
00
```

Output

```
00111100
01000010
00111100
```

Example 2

Input

```
2 2
5
XX
XX
YY
YY
ZZ
ZZ
00
00
11
11
```

Output

```
XXYYZZ0011
XXYYZZ0011
```