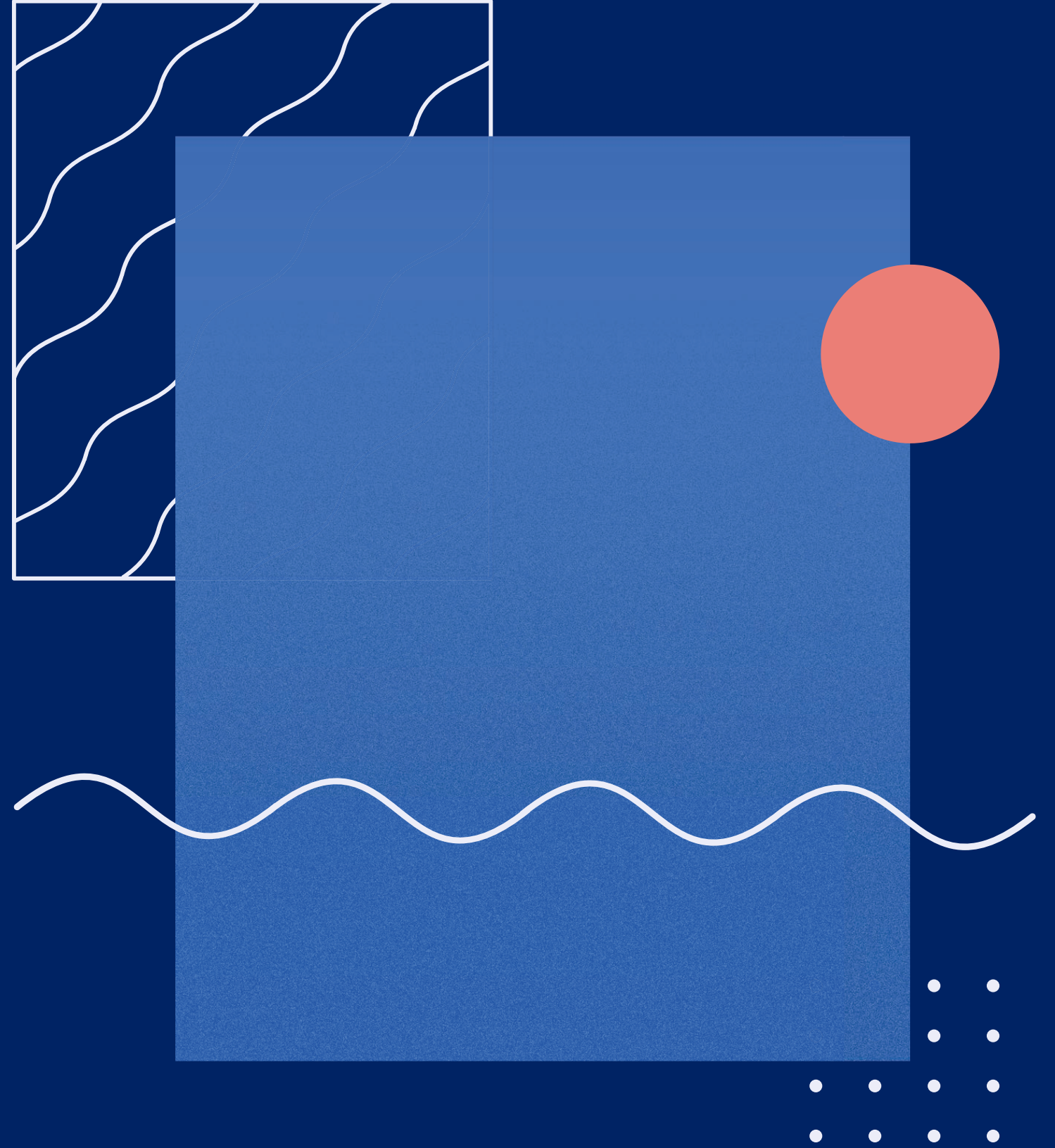
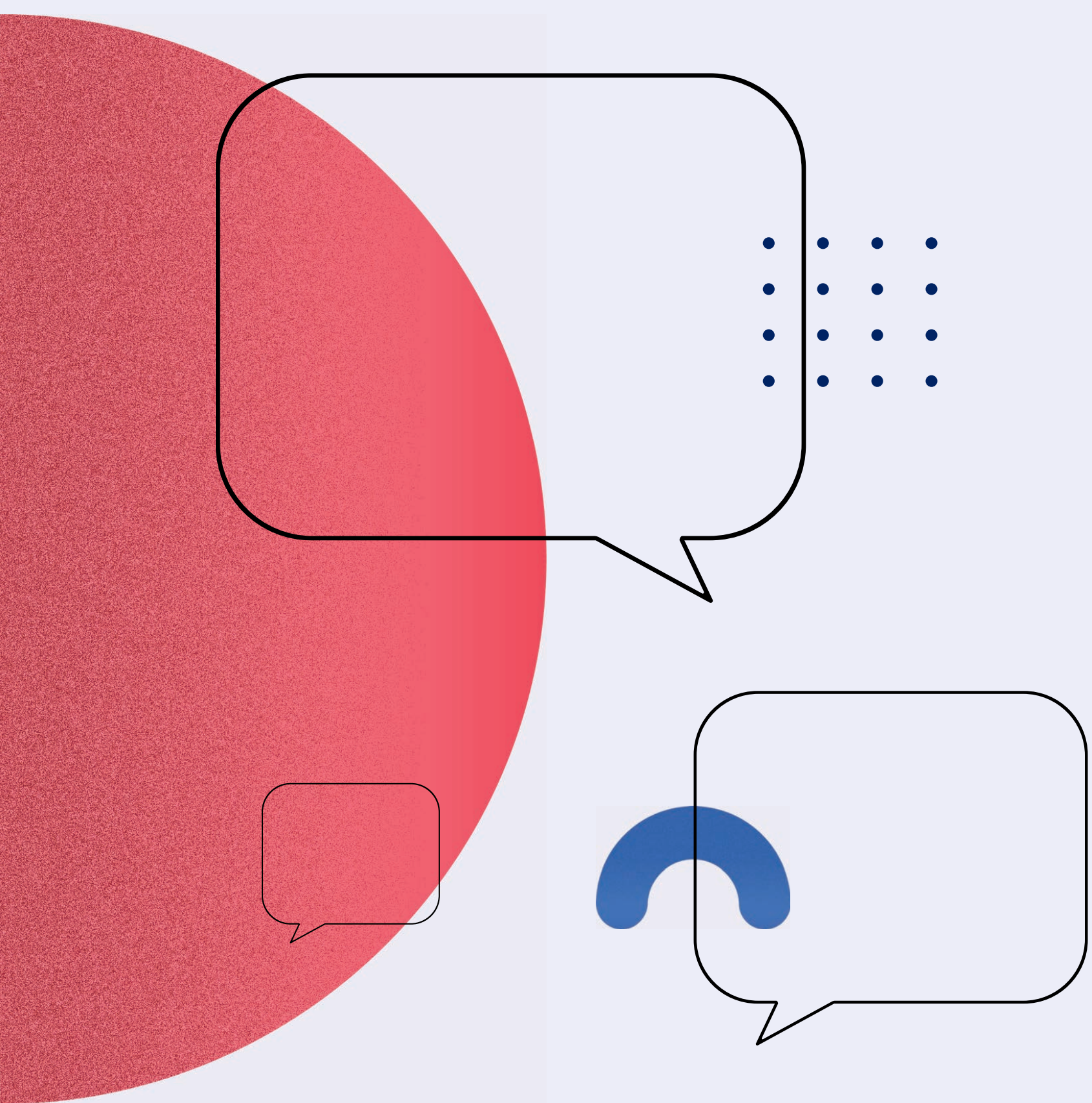


Ethics of Facial Recognition Technology During COVID-19

WHAT ARE THE ETHICS INVOLVED IN USING FACIAL
RECOGNITION TECHNOLOGY FOR CONTACT
TRACING?





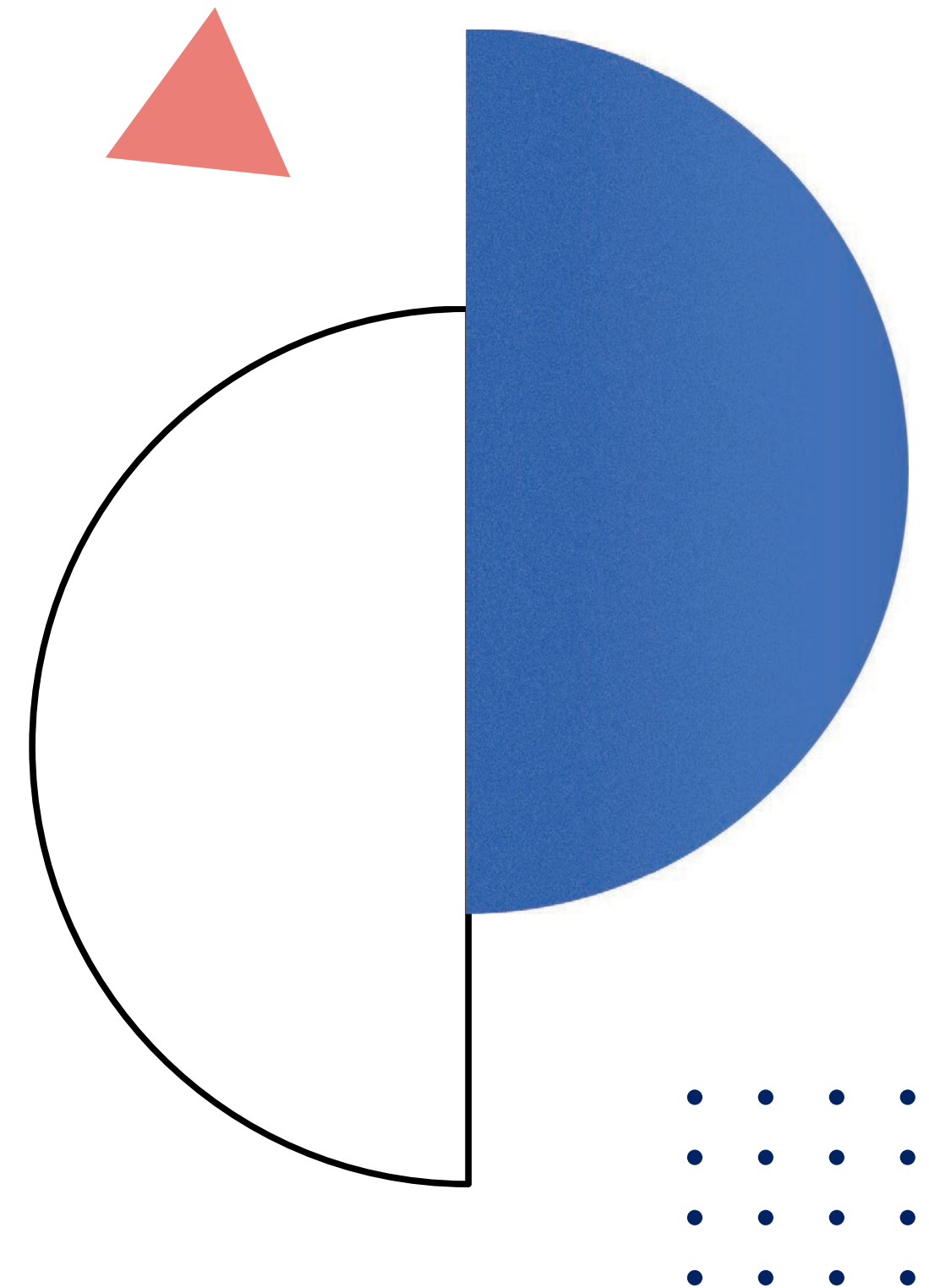
THE PROBLEMS WITH FACIAL RECOGNITION TECHNOLOGY

BIAS

Certain populations, such as people of color and ethnic minorities, are under-represented in facial recognition training datasets.

2018 study by MIT:

*Error rate for light-skinned men was 0.8%,
while darker-skinned women were
misgendered 20% to 34% of the time.*

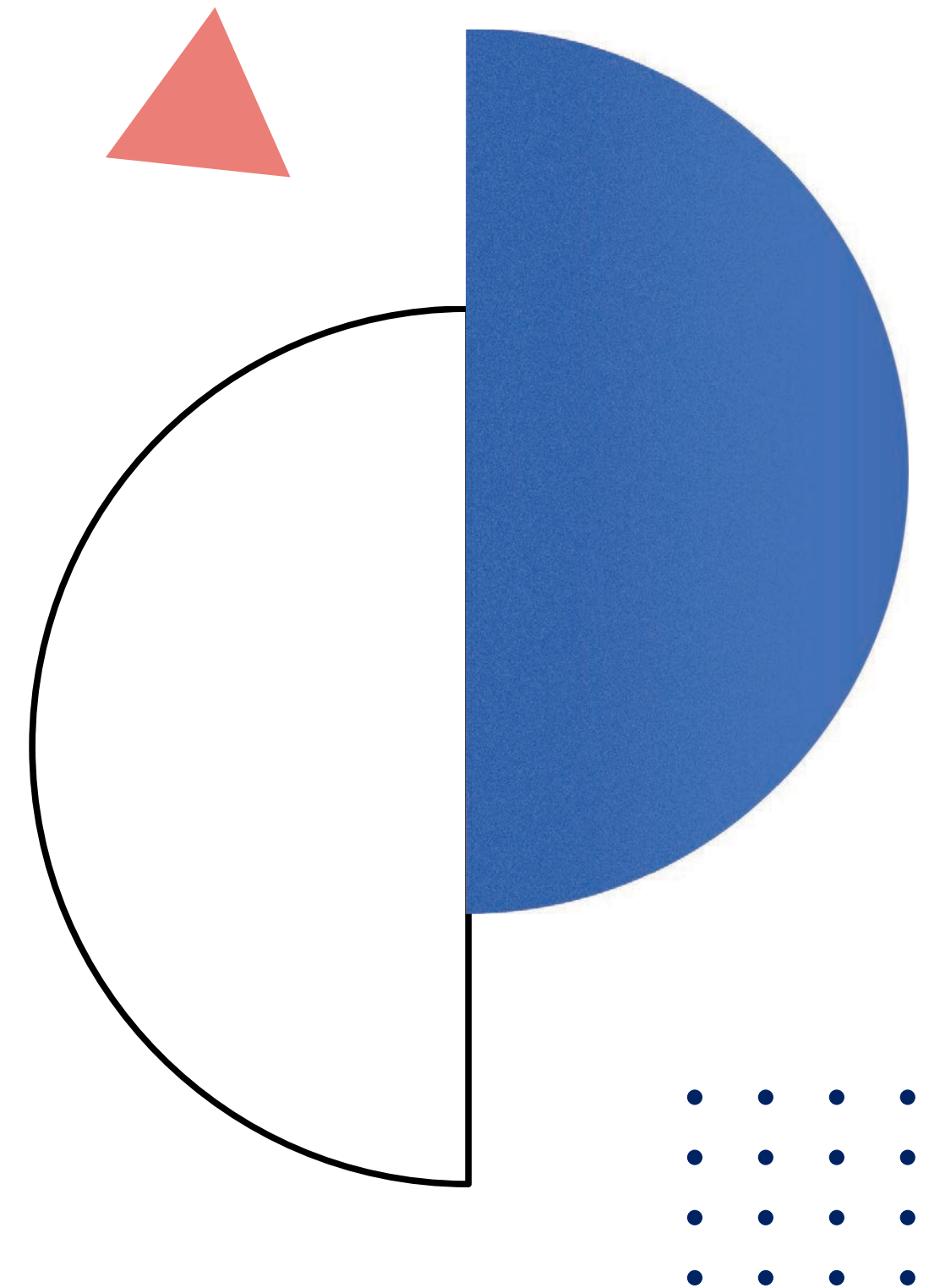


OVER-DEPENDENCE

Error, bias, or inaccuracy in the results could propagate if the human depends solely on the technology. Even more, over-dependence on AI could happen as a whole.

"AI is at risk of becoming another political tool, used to reinforce old state practices, aiming to curb international migration and prevent asylum-seekers from reaching their territories"

-- Dr. Ana Beduschi, University of Exeter Law School

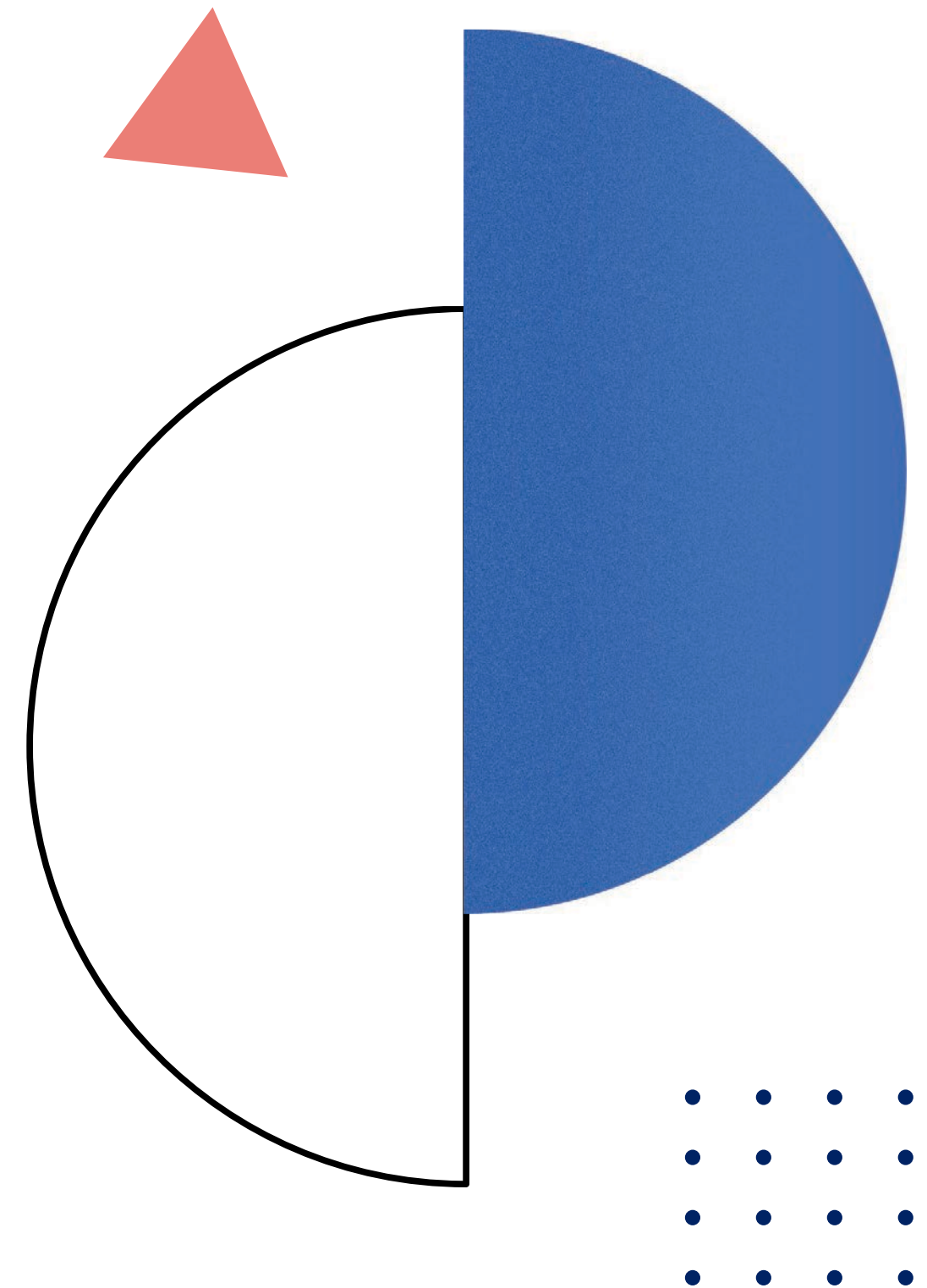


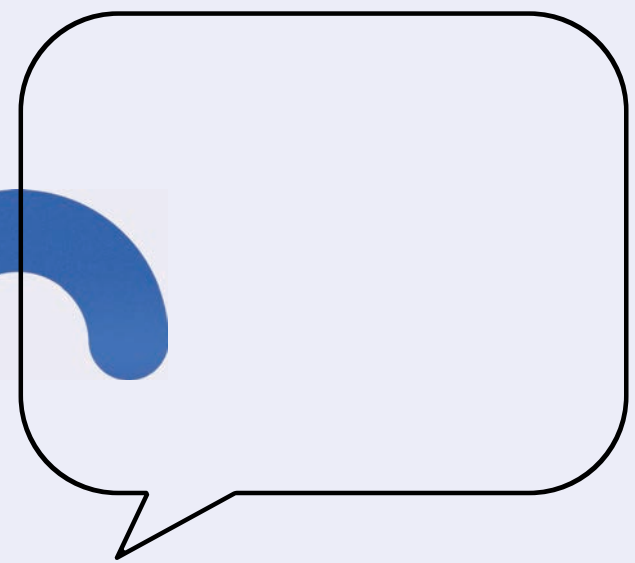
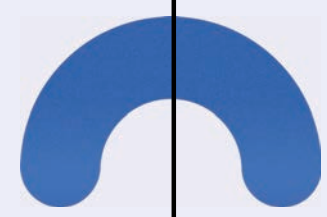
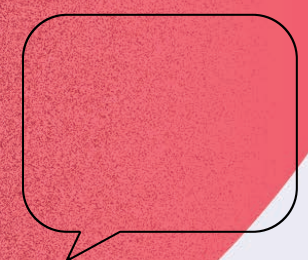
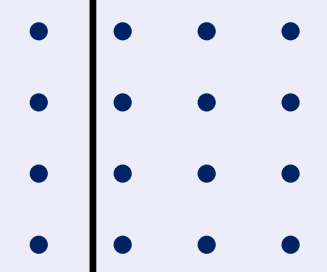
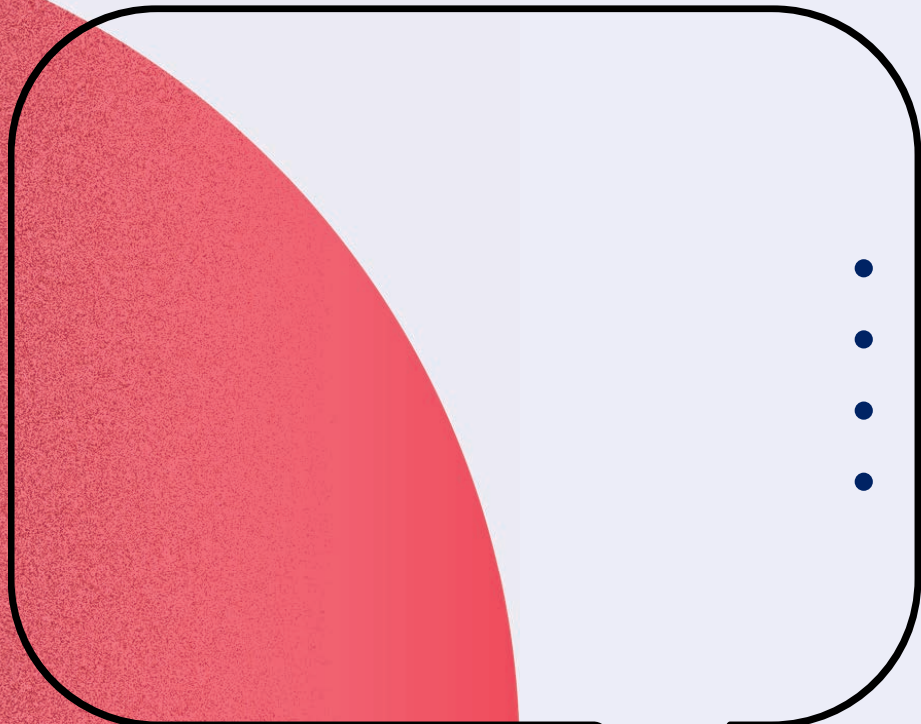
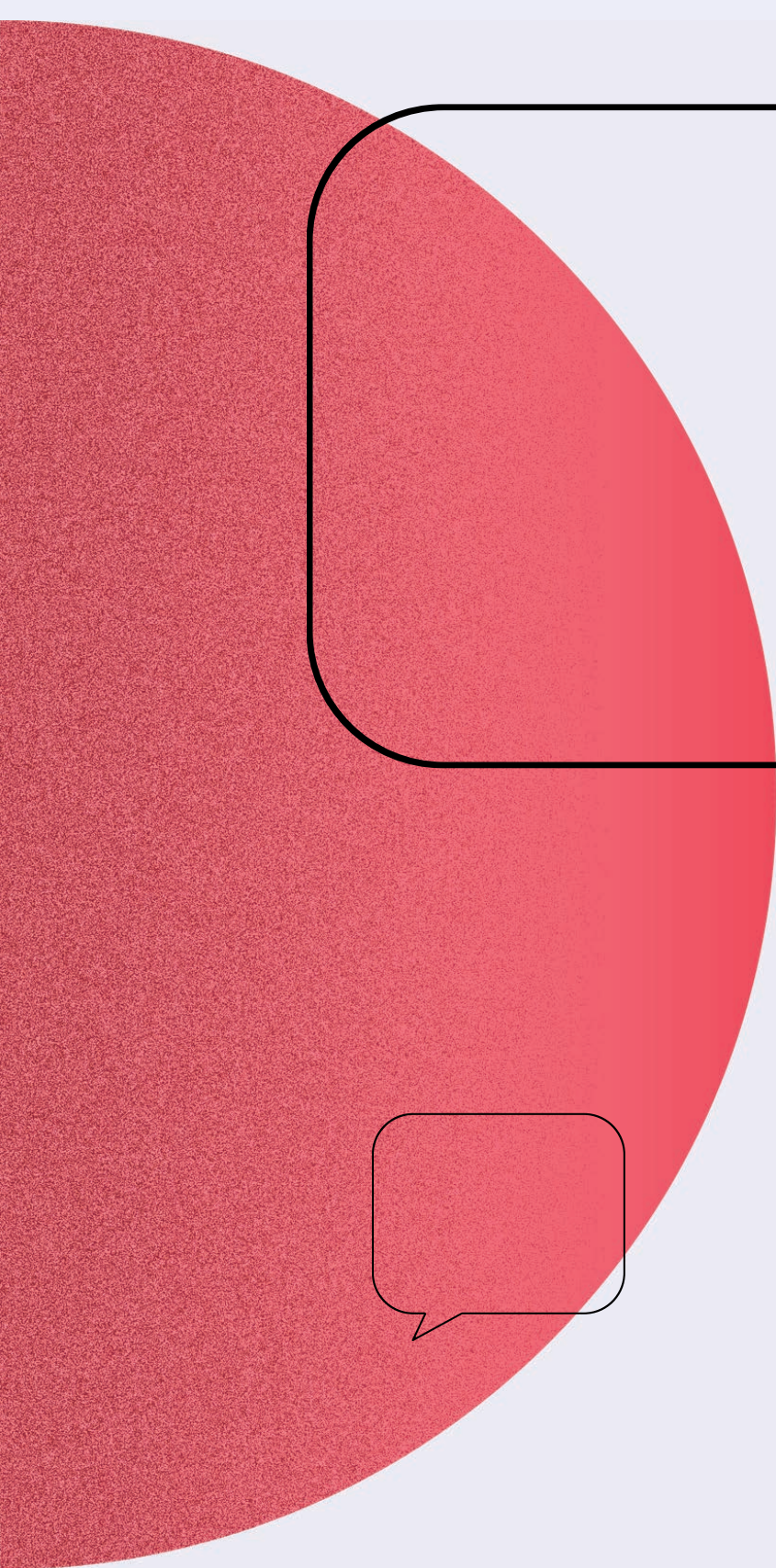
PRIVACY

Our information is instantly in the hands of a supervising entity, and possibly dangerous actors.

"One of the reasons facial recognition is so dangerous is because it's bad when it's inaccurate, but even worse when it's accurate,"

--Dr. Woodrow Hartzog, Northeastern University



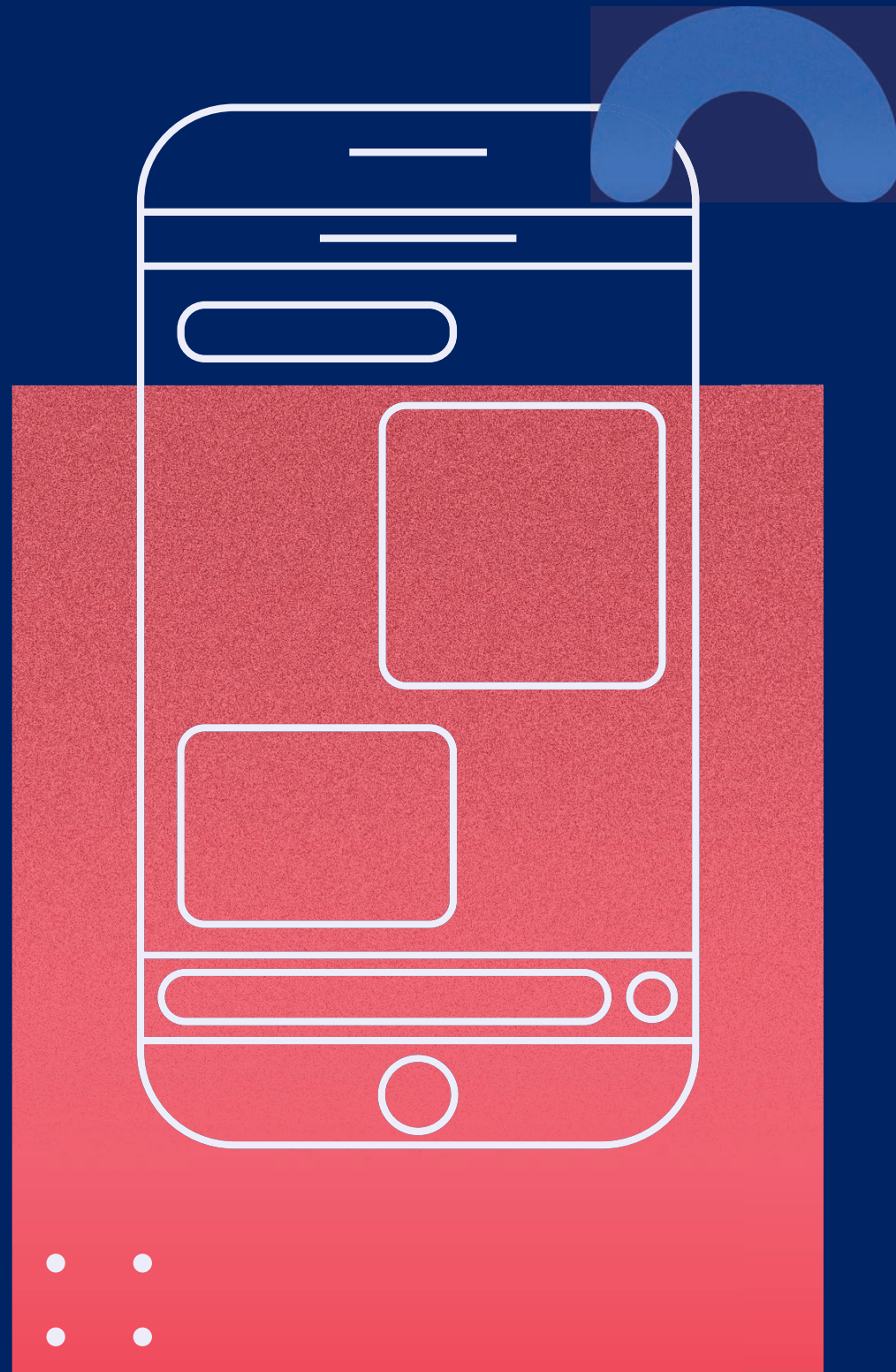


FACIAL RECOGNITION TECHNOLOGY FOR COVID-19 CONTACT TRACING



FIRST OF ALL, IS
FACIAL RECOGNITION
TECHNOLOGY
NECESSARY FOR
CONTACT TRACING?

IS FACIAL RECOGNITION TECHNOLOGY NECESSARY FOR CONTACT TRACING?

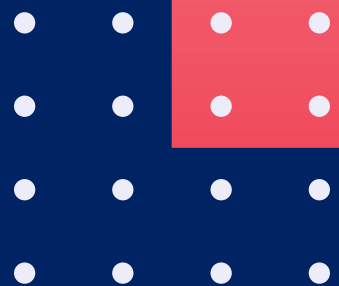


Are smart phones widely available?

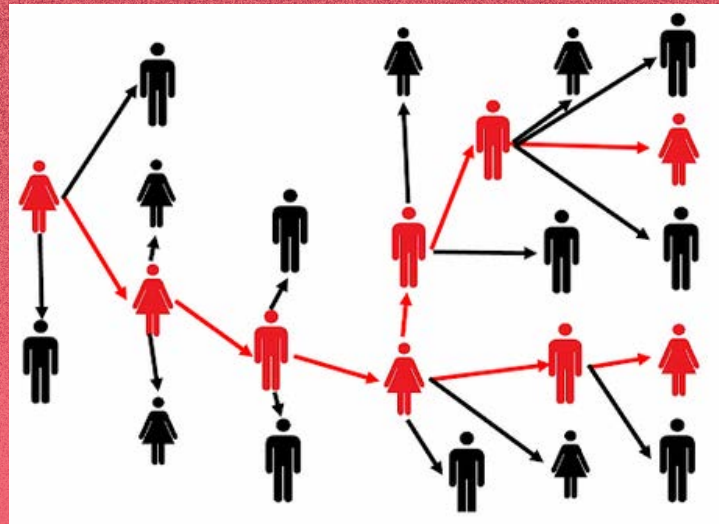


Use GPS or Bluetooth technology!

e.g. MIT Covid PathCheck



IS FACIAL RECOGNITION TECHNOLOGY NECESSARY FOR CONTACT TRACING?



Are professional disease investigation specialists available to help?



Have them conduct contact investigation!

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- • • •
- • • •
- • • •

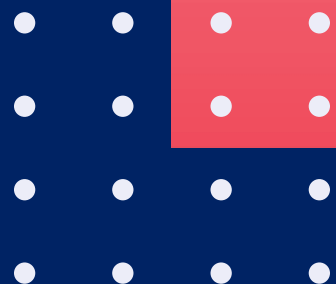
IS FACIAL RECOGNITION TECHNOLOGY NECESSARY FOR CONTACT TRACING?

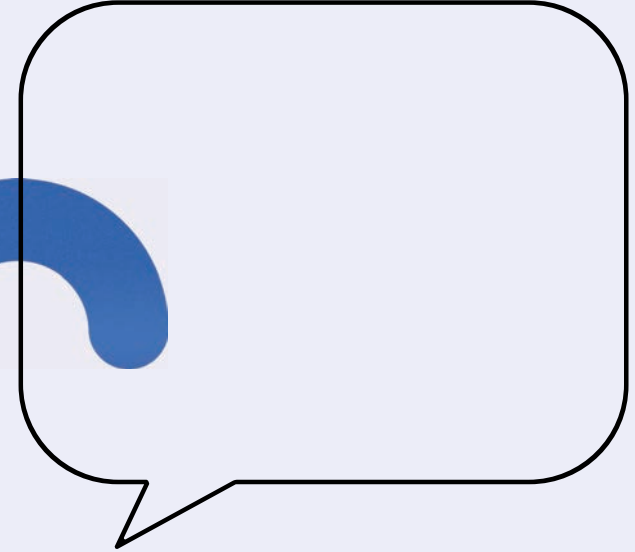
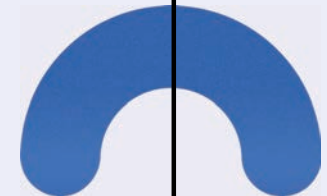
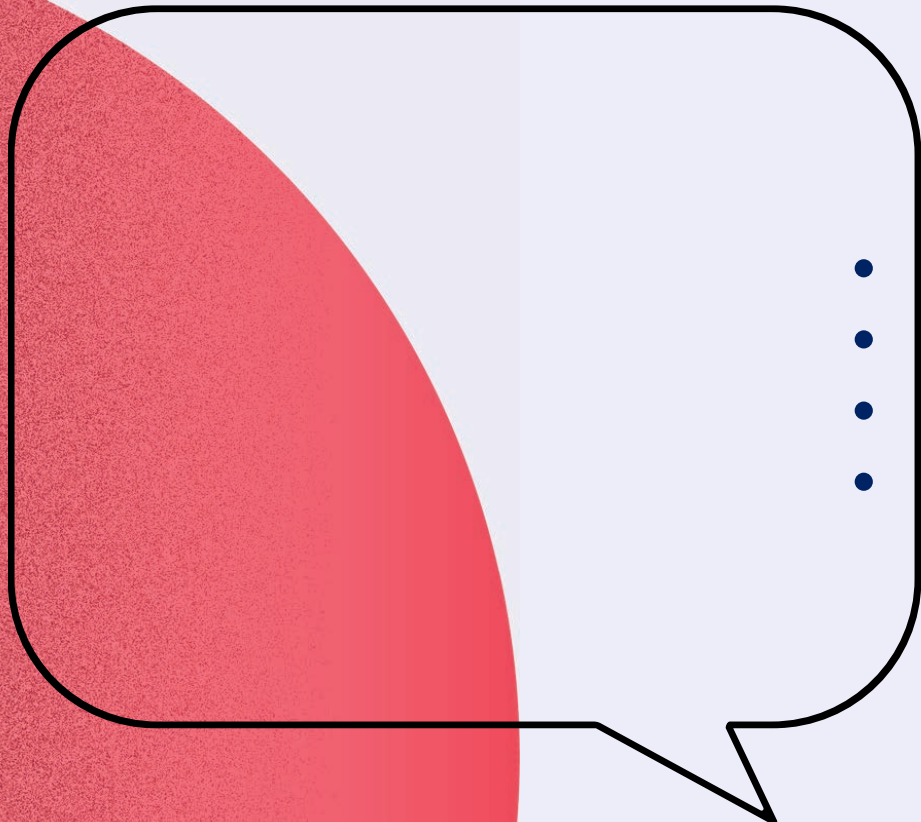
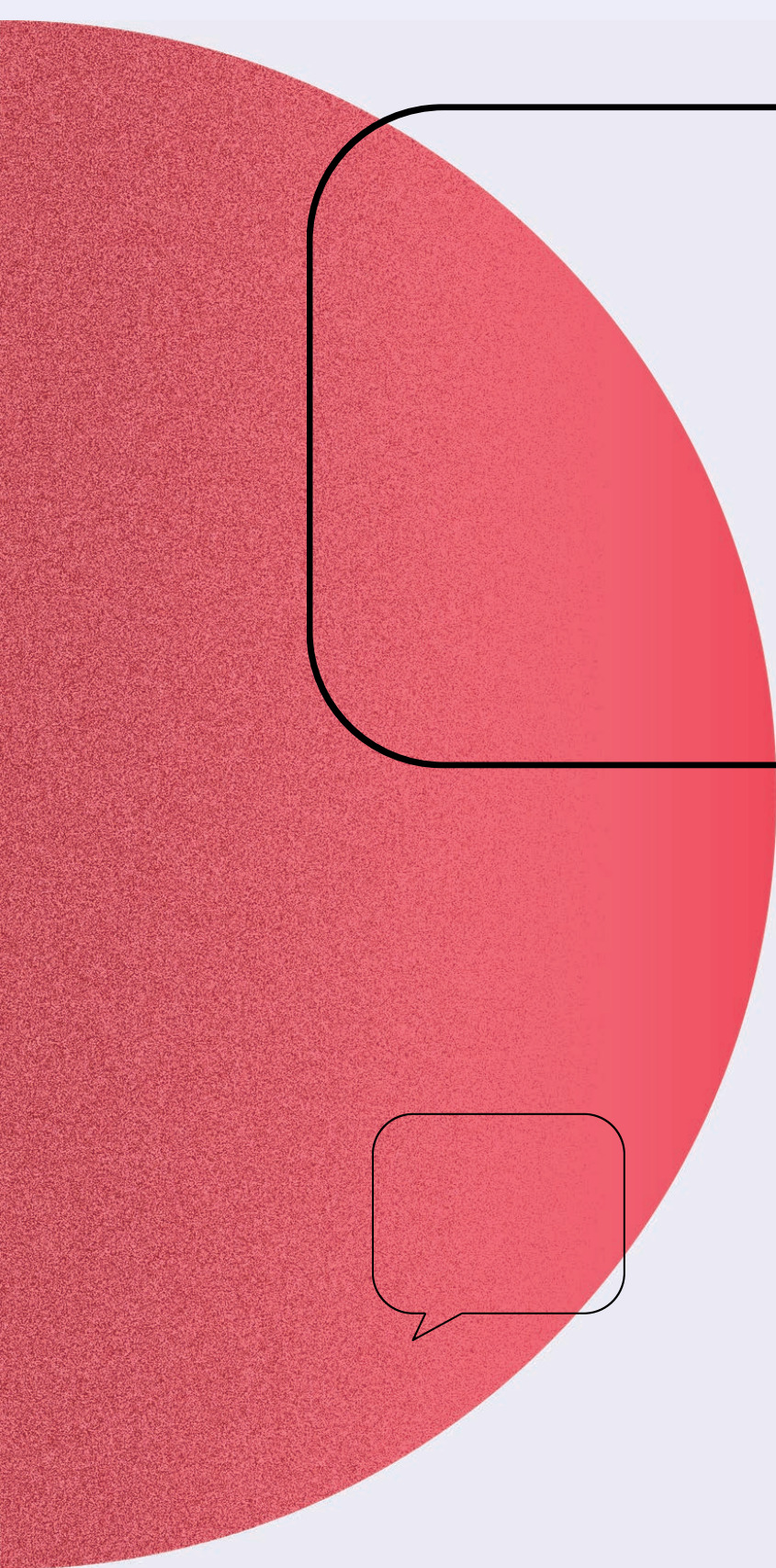


Are community volunteers willing to help?



Have them contact infected individuals for them to go over their recent interactions!





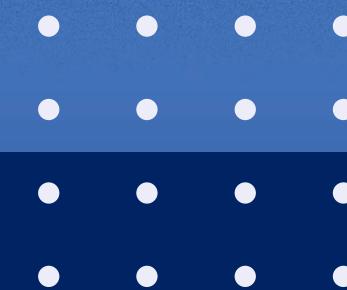
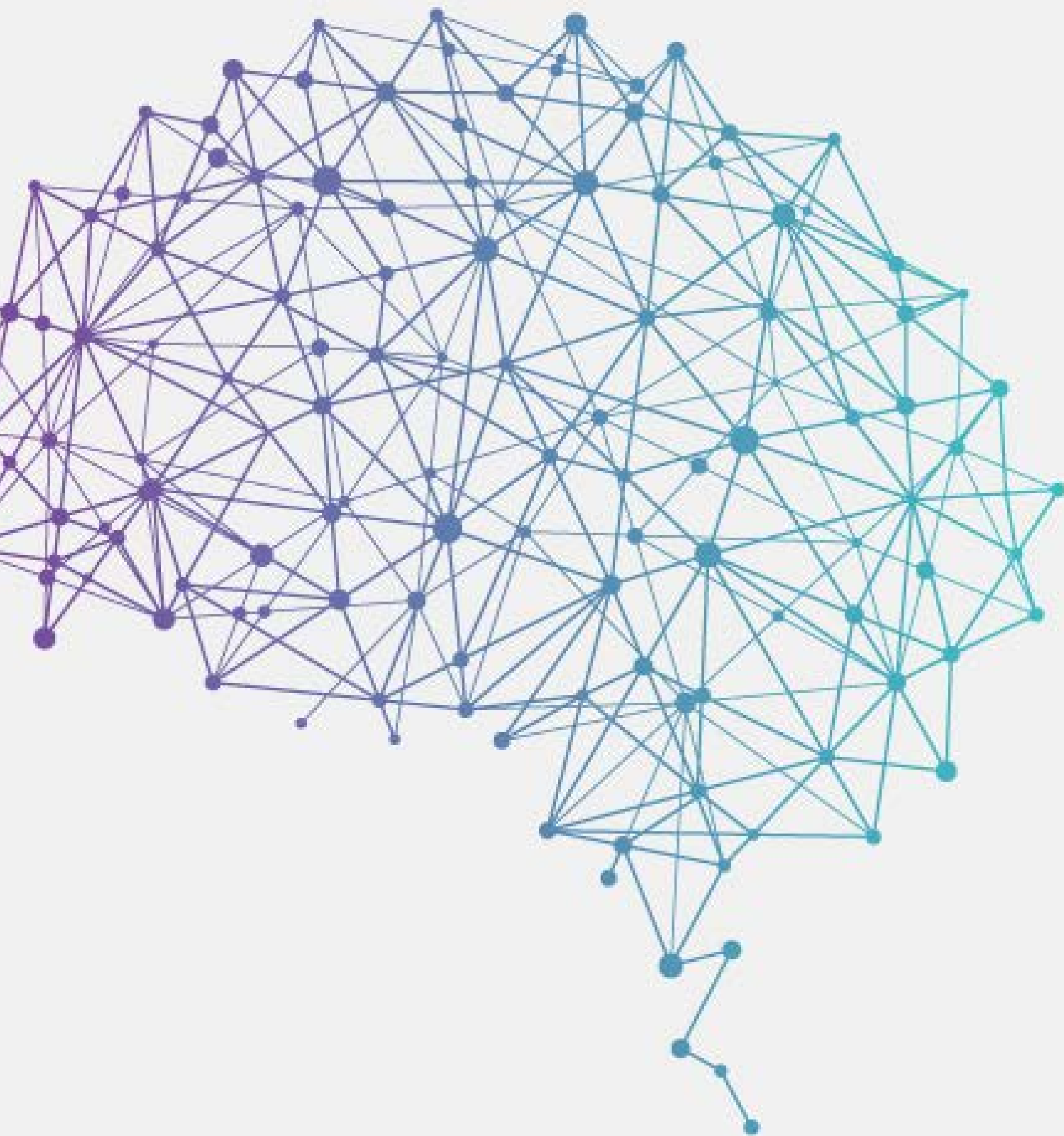
WHAT TO CONSIDER
IF IT IS NECESSARY

REDUCING BIAS IN FACIAL RECOGNITION

How do we ensure that all populations are equally represented?

How do we prevent facial recognition technology from causing harm to communities?





METHODS FOR MITIGATING ALGORITHMIC BIAS

LEVERAGING INCLUSIVE DATASETS



Should the burden be on independent organizations to design ethical datasets?

How do we ensure that this is adaptable and sustainable?

How can the private sector collaborate effectively with these organizations?

RANDOM OVERSAMPLING AND UNDERSAMPLING



How can we ensure that datasets are thorough enough to prevent overfitting?

Should we tailor datasets to certain communities?

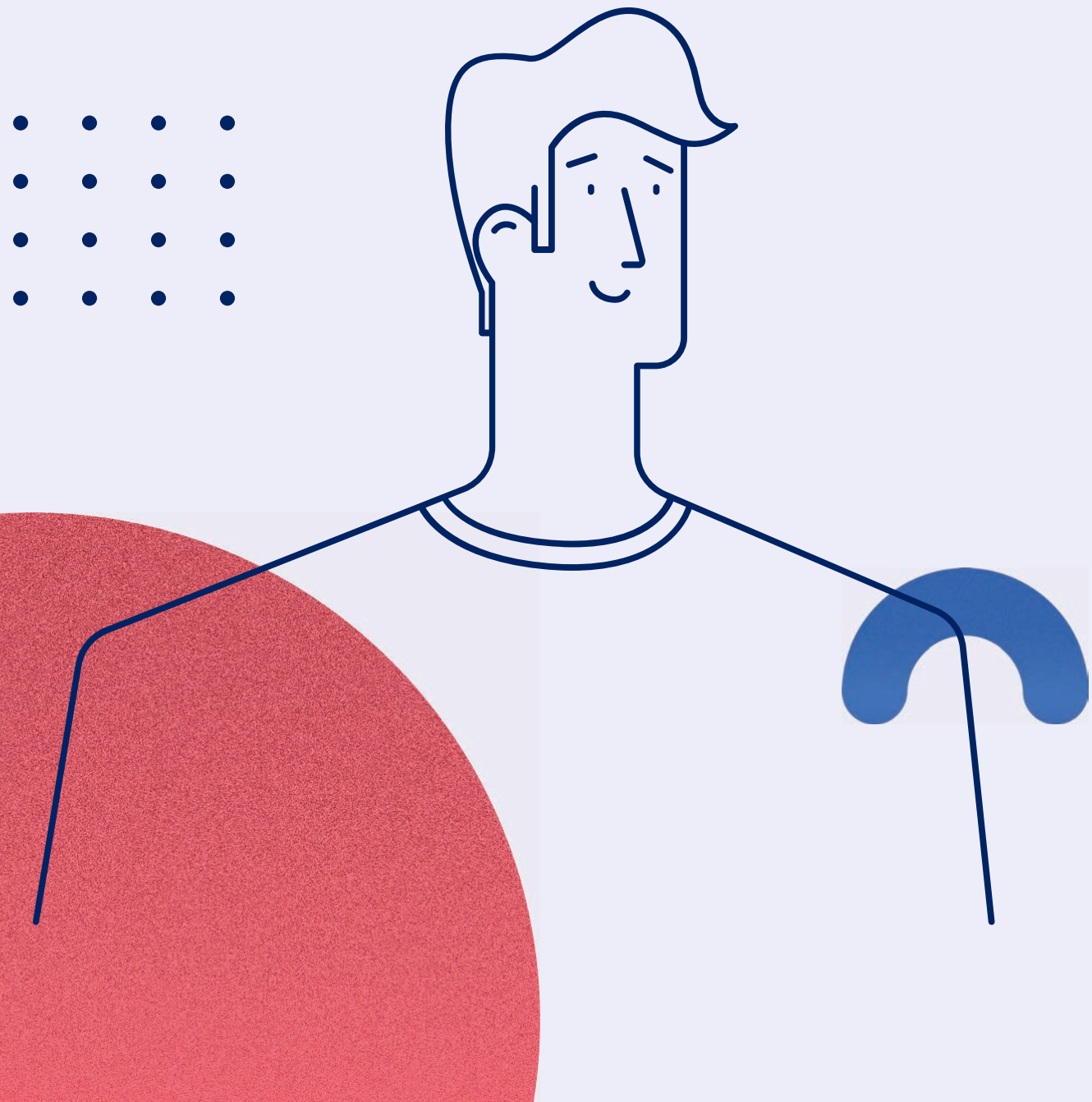
GENERATING DATASETS OF DE-BIASED DATA



Who should decide which class labels we use to generate more of the underrepresented data?

Is it ethical to advance the production of deepfakes?

CLUSTERING AND SIMPLIFICATION OF DATASETS



Who should classify data into labels and "types" of people?

How do we ensure that this pre-processing can be done thoroughly?

AUTOMATIC ADJUSTMENT OF SAMPLING PROBABILITIES



How can we ensure that people are effectively collaborating with these algorithms?



OTHER CONSIDERATIONS

How can we protect privacy?

Is it ethical to take people's information without their consent?

How can we build systems that we can trust with this information?

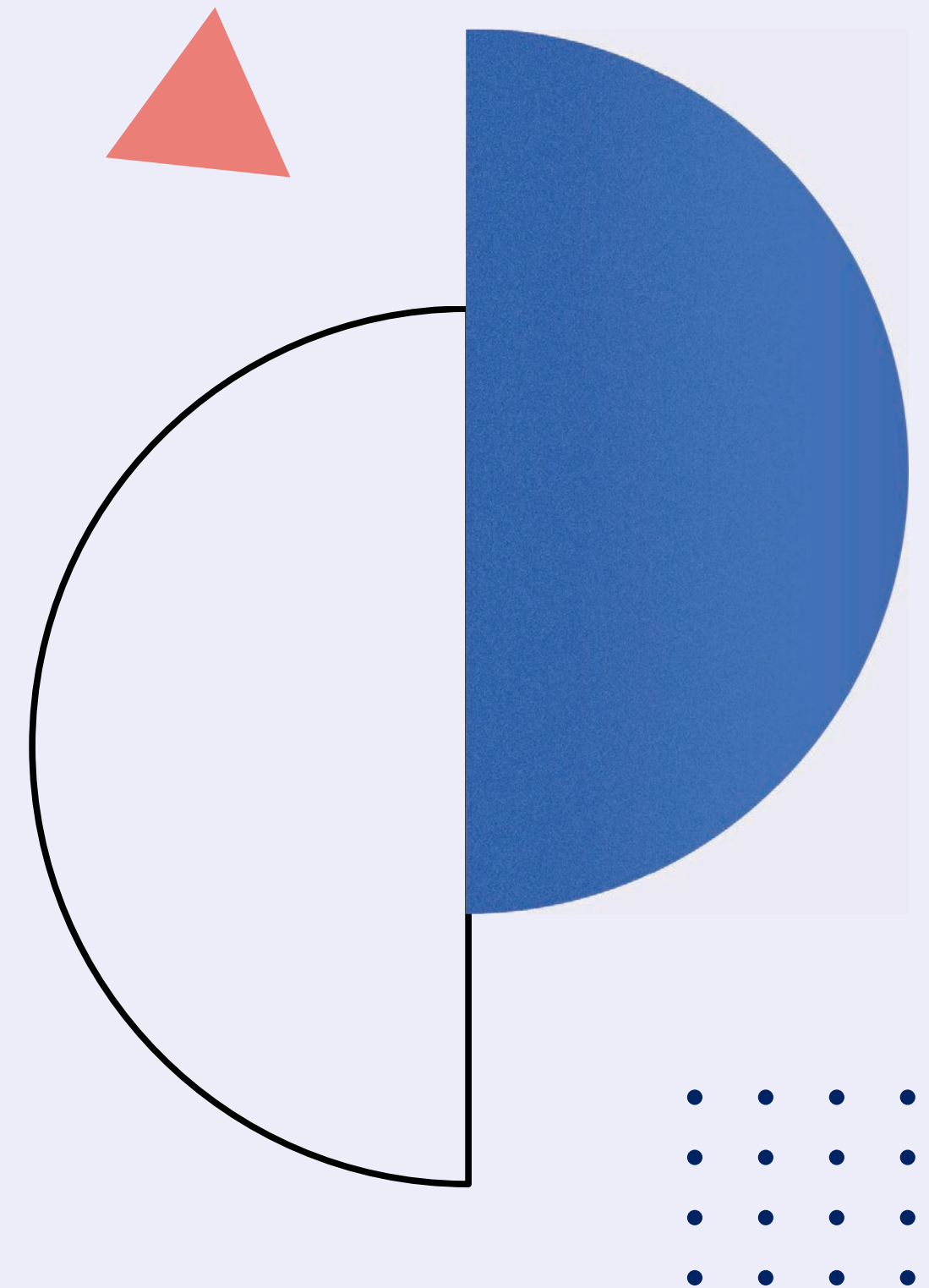
How can we reduce over-dependence of humans on the algorithm?

How can people effectively collaborate with each other and with the technology?

Who should make these ethical decisions?

BUILDING AN ETHICAL COVID-19 CONTACT TRACING TECHNOLOGY

- Opt in system for contact tracing
- Automatic de-biasing to identify humans, using inclusive datasets
- Machine learning combined with pre-programmed heuristics to detect close interactions
- Anonymous explanation for human to check if faces match
- Technology automatically notifies humans who came near infected individual



Thank you!

