Information letter

The study 'Virtual and Augmented Reality for Community Preparedness to Disasters', is being conducted by the NYU Immersive Computing Lab at the Center for Urban Science + Progress (CUSP), NYU Tandon. The primary goal of this study is to explore how people perceive flooding and make decisions when faced with flood risk. During your participation, you will be asked to wear virtual reality (VR) headsets and complete tasks based on your experiences in VR scenes. The researcher will provide you with a survey before the experiment and record your responses to flooding in the virtual world during the experiment. Overall, we aim to learn more about human responses to flooding, explore human perceptions of urban flooding, and investigate how people can protect themselves better from dangerous flooding.

Who can take part in it?

Adults (over 18) who are affiliated with New York University (NYU staff and students) and live in New York City.

What language will be used in this study?

English

How to enroll in the study?

Interested people can find more information on the [project](#) and [register](#) your study.

When will it start?

The study will run from May to June (with the possibility of an extension in July depending on the number of participants), participants can choose a date and time within this period when they register to be part of the study. It takes around 30 minutes to complete the overall experiment (a 5-minute survey session and a 25-minute virtual reality session).

Where will it take place?

Registered participants will be invited to our office, located at 370 Jay St, Brooklyn, NY.

What will happen if I take part in it?

If you agree to participate in this study, you will be asked to: 1) complete a survey about your perceptions of the flood threat and your ability to self-protect; 2) pre-training: researchers will train participants on the basic operations of the VR experiment; 3) during the experiment: participants will experience walking and driving in 3D-Unity simulated New York City at the time of the flood. They will wear a VR headset (Oculus Quest 2) and hold two handheld controllers to experience 32 trials (16 trials repeated twice) in different flood conditions, including two groups of lighting conditions (day and night), two situations (moderate rain and heavy rain), two viewpoints (walking viewpoint: standing, driving viewpoint: sitting), and two notification conditions (no notification and with alarm notification). For each trial, we will ask you to press the button on the controller at three different times based on the changes in people's perception of flooding: 1) the time when you notice abnormal rain; 2) the time when you feel vulnerable as your situation becomes dangerous and you doubt that you can protect yourself; 3) the time when you feel hopeless and you need to leave the game. You will leave the game immediately after pressing the third time, and you will automatically enter a new trail.

Is there any risk?

The only data we will collect is your button presses and survey responses. No identifiable data will be collected and analyzed in the experiment, and there is no risk to your privacy. Participants have the right to refuse to answer questions or to withdraw from the study at any time without penalty.

If you are pregnant, elderly, or have any of the following health conditions, please think carefully and consult a physician before confirming participation in the study: 1) You have a history of binocular vision abnormalities or psychiatric disorders. 2) You have a heart condition or other

serious medical condition. 3) You are ill, fatigued, under the influence of intoxicants/drugs, or generally unwell. 4) You are unable to view the 3D effect clearly and comfortably.

If you lose or damage study-issued equipment, you will not be responsible for the cost of the equipment or its repair.

Do I have benefits?

Your participation in this study is voluntary. However, by participating, you will have an immersive visual experience of urban flooding that will improve your ability to respond to disasters and enable you to learn the correct flood evacuation decisions. In addition, this research can help researchers understand human behavior in the face of urban flooding in the context of virtual reality.

Each participant will receive a $10 gift card upon completion of all participation. Participants will not receive compensation if they withdraw from the study prior to completion. Only email address will be collected and virtual gift cards will be emailed to participants. Participants will receive compensation immediately after data collection session.

How do I protect my privacy?

We are committed to protecting your privacy. Data from this study will be kept confidential within the research team. The data collection will be completely anonymized with no self-identifying information, and no material that could personally identify you will be used in any reports or publications from this study.

If you have any questions, concerns, or complaints about this research study, its procedures, risks, and benefits, you may contact Dr. Zhaoxi Zhang at zhaoxi.zhang@nyu.edu. This project has received ethical approval from the NYU Research Ethics Committee (IRB) and will comply with the IRB's requirements for data protection.